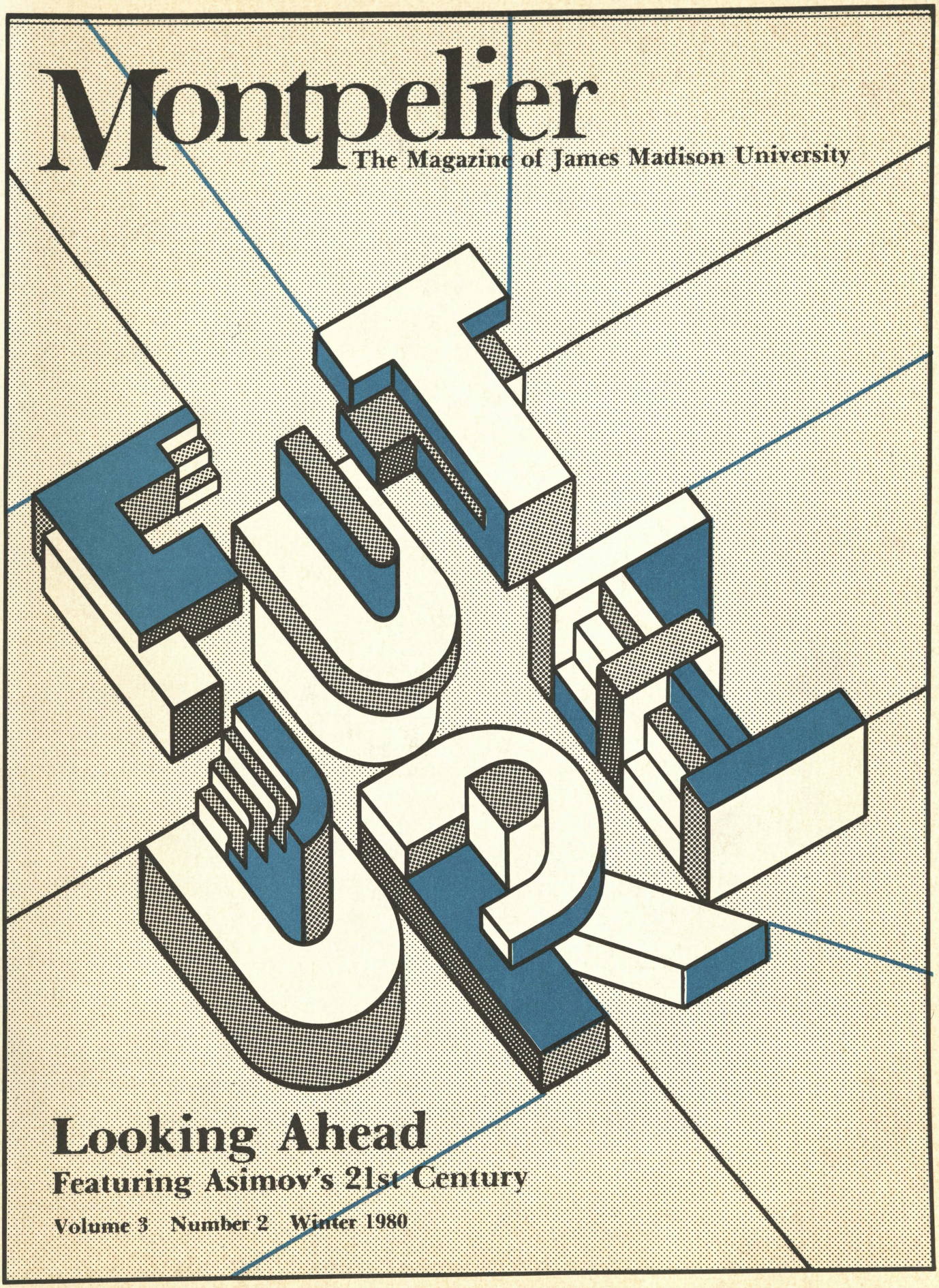
Montpelier

The Magazine of James Madison University



Looking Ahead

Featuring Asimov's 21st Century

Volume 3 Number 2 Winter 1980

Montpelier magazine, named for the home of James and Dolley Madison, is printed quarterly for alumni, faculty and friends of James Madison University. *Montpelier* is published by JMU's Division of University Relations in cooperation with the University Alumni Association.

Montpelier

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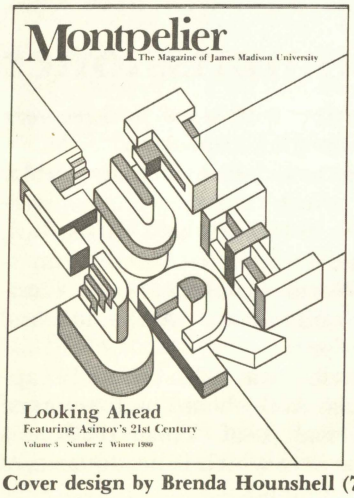
10 Asimov's Deep Future

Isaac Asimov, the biochemist and science fiction writer, materialized in Godwin Hall recently and spoke to a near capacity crowd. His vision of the future, through the transcribed text of his speech, is our centerpiece article this time around. Asimov manages to get us about as far away from JMU's 364 acres in the Shenandoah Valley as we're likely to go, in this lifetime, at any rate.

32 The University's New Decade

The nurturing of James Madison University through the 70's was accomplished with this new decade in mind. Our student body is going to face new societal requirements through the next ten years and JMU is ready to meet the challenge with new and adjusted programs. President Ronald E. Carrier comments on the University's role in the coming years.

As if Asimov's speculations weren't enough, we wondered what the next century might hold for us in various areas: business, education, letters, sciences, arts and communications. If the topics sound familiar, they should, as they're related to JMU's schools. We peered through the minds' eyes of representative deans and faculty, and came up with a prospectus for the 21st century.



Cover design by Brenda Hounshell (76)

The word for this issue is "future," and artist Brenda Bocock Hounshell ('76) carried the theme through with her cover and other illustrations. Not only did she render with pen and pencil, she waxed graphic, and provided us with this issue's layout.

University News

Library Addition Begins

A Significant New Space for JMU Greatness

Ground was broken in November for a library addition at James Madison University and JMU President Ronald E. Carrier said the construction project is one of the most important in the history of the University.

Carrier said that JMU has been moving rapidly toward greatness in recent years and "of all the buildings we have erected or propose to erect, this one is the most significant in the movement toward greatness."

The addition will ultimately more than double the size of Madison Memorial Library. University officials have said that the present library is only about 40 percent of the size recommended for an institution with JMU's enrollment.

The library addition will extend behind the present library.

Work has now begun on the first phase of the expansion. That phase consists of some renovation in the present library and the development of the basement and a usable first floor in the addition.

The $2.8 million project is being built by Nielsen Construction Co. of Harrisonburg. Construction will take about a year and a half.

JMU is seeking funds from the 1980 session of the Virginia General Assembly for the second phase of the project. The second phase includes completion of the three-story building.

In the ceremony at the construction site, ground was formally broken by Nellie L. Long of Edinburg, a JMU graduate and a member of the University's Board of Visitors, and Dr. Mary F. Haban, dean of libraries and learning resources at JMU.

Board member Long and Dean Haban give the library addition its start as President Carrier and students look on. Other participants in the ground breaking were: JMU Vice President for Academic Affairs Thomas C. Stanton; Assistant Librarian Lowell Ashby and History Professor Frank A. Gerome, who assisted in planning the new library; Walter R. Troubaugh, president of Nielsen Construction Co.; and Hubert Jones of the Richmond architectural firm of Wright, Jones and Wilkerson.

President Named Commissioner

James Madison University President Ronald E. Carrier has been named to the Commission on Colleges of the Southern Association of Colleges and Schools (SACS).

SACS is the regional accreditation agency for colleges, universities and secondary schools.

The Commission on Colleges of SACS is responsible for developing guidelines for accreditation of colleges and universities and for setting up evaluation procedures.

Carrier will serve a three-year term on the commission.

The association includes public and private colleges and universities in Virginia, Mississippi, Texas, Florida, Georgia, Tennessee, North Carolina, South Carolina, Kentucky, Alabama and Louisiana.

Carrier was also recently appointed to the board of directors of Universal Leaf Tobacco Co., a major firm which is headquartered in Richmond.

Library and Residence Hall Included

Construction Funds Top List For General Assembly Session

The need for funds to complete the addition to James Madison University's Madison Memorial Library has top priority among the University's requests to the 1980 session of the Virginia General Assembly.

The first phase of the library addition is already under way with funds previously allocated by the General Assembly.

However, approximately $1.5 million in additional funds is necessary for the full addition to be completed. The project will ultimately double the size of the present library.

The General Assembly, which convened early in January, provides state funds for the construction of academic buildings at JMU and must also approve the University's plans to construct buildings which are financed with non-tax funds.

JMU is also seeking permission to construct a $1.9 million, 136-bed residence hall. The construction would not involve tax funds and would be financed through rent students pay for living in the dorm.

The State Council of Higher Education for Virginia (SCHEV) had originally recommended against construction of the dorm. SCHEV had rejected JMU's request along with similar requests from several urban universities.

SCHEV has expressed its opposition to the construction of dorms at urban institutions or at institutions without extensive on-campus facilities for students.

The state council, however, reversed its position and endorsed the JMU project after hearing an appeal from JMU President Ronald E. Carrier.

Carrier explained to SCHEV that JMU is already a highly-residential campus and already has the on-campus facilities necessary for students. There are not enough off-campus apartments in Harrisonburg to accommodate JMU's students, he told SCHEV.

Other requests from JMU going to the General Assembly include:

—Seeking permission to use $1.7 million in non-tax funds to add 6,800 permanent seats on the west side of Madison Stadium. This would give the stadium a seating capacity of 12,000 and accommodate JMU's move to Division I-AA of the NCAA in football.

—Receiving authorization to use $1.5 million in non-tax funds for an addition to the Warren University Union. The addition will contain a student meeting and conference facility.

—A request to remodel the administrative and classroom portion of Wilson Hall, which was built in 1930.

—A request for additional funds to purchase library books and a request to increase faculty salaries by around 11 percent.

The University is also asking the state's permission to use previously-allocated funds to expand the seating capacity of a new indoor athletic facility now under construction on campus. The funds had originally been earmarked for expanding the seating capacity of Godwin Hall. University officials have said, however, that it would be more feasible to expand the capacity of the new facility and use it for intercollegiate basketball and other events rather than expand Godwin.

Archeology Center Receives $450,000 In Contacts, Grants

Contracts and grants exceeding $450,000 have been awarded to the James Madison University Archeological Research Center, a division of JMU's department of sociology, anthropology and social work.

The awards include a contract with the U.S. Army Corps of Engineers for the final cultural resource investigation of the Gathright Dam-Lake Moomaw Project in Bath County; a phase I cultural reconnaissance of 15,000 acres of land in the Hidden Valley area of the George Washington National Forest in Bath County; and authorization to continue and expand the operations of the archeological survey staff.

The project being conducted at Gathright Dam is the largest and most comprehensive cultural resource investigation ever carried out in Virginia, the spokesman for the center said.

The research center is under the joint direction of Dr. Clarence R. Geier, coordinator of the anthropology program and associate professor of anthropology, and William Boyer, assistant professor of anthropology.

University News

Student Poll Shows "Suburban Attitude"

The 1979-80 freshman class at James Madison University continues a three-year trend toward conservative and traditional values with an emphasis on using a college education to become financially successful, according to a survey conducted by the University's division of student affairs.

The survey collected information from 1,322 freshmen. The information is used to develop a "typical" freshman profile.

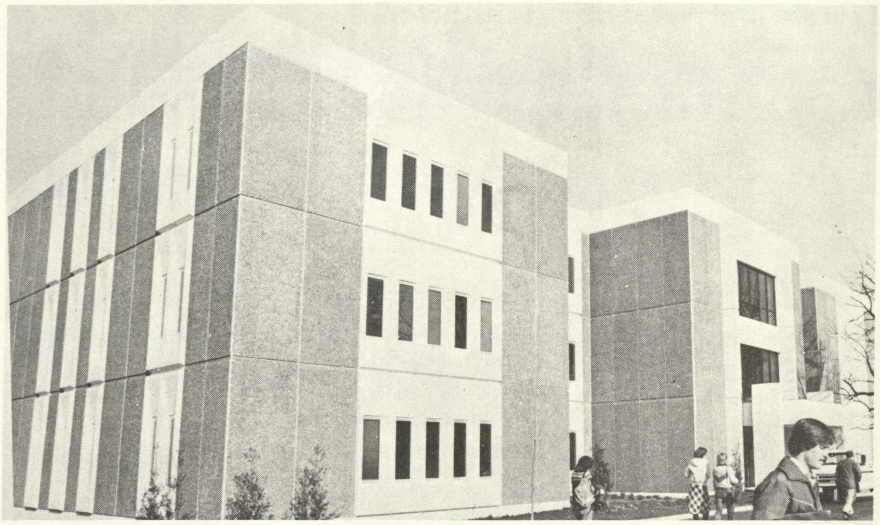
Based on the survey, the typical freshman continues a trend that began in 1976. According to Dr. Lacy S. Daniel, dean of students, a concern about living under University regulations continues to decline, while concern for privacy, living a strict moral life, helping others and being well-off financially continues to rise.

"We are definitely in a new generation of students," Daniel said. The attitudes of students today are more easily compared to attitudes in the 1920s and late 1950s than attitudes of students in the late 1960s and early 1970s, he said.

Daniel linked the typical freshman philosophy to "a suburban attitude." According to the survey, 62 percent of the incoming freshmen are from suburban communities, 25 percent are from small cities, 4 percent are from urban areas and 9 percent from rural areas.

According to the survey, the typical freshman of 1979 is 18 years old (80 percent) and was a "B" student in high school. Of the new freshmen, 43 percent were in the top 10 percent of their graduating class.

Family income was estimated at more than $30,000 annually (49 percent). JMU was the first choice for 81 percent of the students surveyed. In high school, activities frequently participated in were recreational sports and athletics.



JMU's newest is the school of education building, opened at the beginning of this semester.

New Nursing Program Gears Up for 80-81

Final approval has been given to James Madison University to initiate a four-year degree program in nursing at the University.

The program was designed to replace a three-year diploma program at Rockingham Memorial Hospital.

The JMU program has now been approved by the State Council of Higher Education for Virginia and the State Board of Nursing.

The first students will enroll in the program in the fall of 1980. Clinical facilities at Rockingham Memorial will be used in the program.

JMU's nursing program is headed by Dr. Marcia Dake, former dean of the College of Nursing at the University of Kentucky.

JMU Undergoes Accreditation Self-Study

A self-study which is expected to take two years is under way at James Madison University.

The JMU committee's study will be used as a background report for an accreditation team which will evaluate the University for the Southern Association of Colleges and Schools (SACS).

Dr. Elizabeth Ihle of the JMU department of secondary education and Dr. Kent Moore of the physics department will head the committee making the study.

"It's designed to help us see our weaknesses and strengths," assistant professor Ihle said.

The visit by the accreditation team, made up of faculty members and administrators from other colleges and universities, will "verify what we put in the report," associate professor Moore added.

The report is expected to be completed in the fall of 1981, with the accreditation team's visit due to take place the following spring.

Accreditation by a regional body intends to establish uniformity and guarantees transfers of credits from one institution to another.

With certain minimum standards expected, "you have some confidence that the credits mean something," Moore said. Each school must be accredited every 10 years.

University News

Preliminary to Miss Virginia Pageant

Susan Durrin Crowned Miss JMU

The President and Miss JMU.

A 21-year-old senior at James Madison University, Susan Eileen Durrin of Vienna, has won the title of Miss James Madison University.

At 6 feet tall, Miss Durrin was the tallest of the 15 contestants in the first annual Miss JMU Pageant.

A crowd of about 700 attended the January 13 pageant at JMU's Wilson Hall.

Miss Durrin will now represent JMU at the Miss Virginia Pageant this summer in Roanoke.

The daughter of Mr. and Mrs. Kenneth A. Durrin of Vienna, Miss Durrin weighs 140 pounds and has brown hair and blue eyes.

Her talent presentation in the pageant was a dance to "The Last Blues Song." She is a communication arts major at JMU and has worked in the summers as a dancer at Williamsburg's Busch Gardens.

The first runner-up in the pageant was Anna Theresa Gerard of Virginia Beach. The second runner-up was Janell Maureen Schoedler of Chesapeake.

Miss Gerard is the daughter of Mrs. Julie Gerard of Virginia Beach.

A 20-year-old junior physical education/dance major at JMU, Miss Gerard sang "Purlie" in the talent competition.

The second runner-up, Miss Schoedler, is the daughter of Mr. and Mrs. Harry P. Schoedler of Chesapeake.

Miss Schoedler is a 20-year-old junior at JMU and is majoring in fashion merchandising.

Her talent presentation was a ballet and jazz dance to variations of "Rhapsody in Blue."

Contestants were judged on talent presentations, on swimsuit and evening gown competition and on interviews with the judges.

Contestants in the pageant selected the winner of the Miss Congeniality award, Sharon Lorraine Walge of Staunton. Miss Walge, a senior music major at JMU, is the daughter of Mr. and Mrs. Herbert H. Walge of Staunton.

Loan Fund Named for Late Comptroller

Donald Eugene Gardner, comptroller at James Madison University for the last nine years, died in November at Rockingham Memorial Hospital.

Gardner, 60, had been assistant vice president of United Virginia Bank-Spotswood in Harrisonburg before joining the JMU staff in 1970.

The University's Board of Visitors has agreed to name a new loan fund for students at JMU in Gardner's honor.

The fund, which goes into operation this year, will be known as the Donald E. Gardner Memorial Loan Fund.

The fund makes short-term loans available to students. Gardner was instrumental in the establishment of the fund.

Class Notes

1931

- **Eleanor Wrenn Smithey** recently moved from Richmond, Va., to Gorham, Maine.

1943

- **Dot Wilkinson Butterworth** recently retired from teaching in the Petersburg, Va., school system.
- **Ann Griffith Horton** has a private counseling practice in Fairfax and Springfield, Va. She and her husband Andy recently took a cruise in the Caribbean.

1944

- **Dr. Mary E. Robertson Bredemeier** has been promoted to professor of education at Montclair State College in Upper Montclair, N.J. She is co-author with her husband, Dr. Harry C. Bredemeier, of the book "Social Forces and Education" and is also president of the New Jersey State Conference of the American Association of University Professors.
- **Marjorie Willard,** professor of physical education at Marymount College of Virginia, was recently cited by the college for her 25 years of service. She was elected by her colleagues as faculty marshal for commencement.

1950

- **Dr. Byard S. Deputy** has been named a fellow of the American College of Dentists. Dr. Deputy, chairman of the dentistry department at the University of Virginia School of Medicine, was one of 178 dentists selected for the honorary organization.

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University News

New Buildings Rise on Opposite Hills

Through the mud and snow of winter months, construction of JMU's two newest structures, the Madison Memorial Library addition and the recreation facility across I-81 from campus, has ground persistently forward.

The silhouette of a sole worker perched on the superstructure of the recreation facility, above right, contrasts darkly against the icy winter sky.

The old gazebo between the library and Hillcrest has been moved to back campus, making room for the heavy trucks and equipment beginning foundation work on the addition, at top and above left.

Alumni News

Governor Appoints Lee to JMU Board

Emily L. Lee of Columbia, S.C., secretary of the JMU Alumni Association, has been named to the University's board of visitors.

Mrs. Lee has been on JMU's alumni board of directors since 1975. She is a legal assistant with the Columbia firm of Lee, Suggs & Kelly.

She was appointed to the JMU board of visitors by Gov. John N. Dalton. Mrs. Lee succeeds Robert L. Dolbeare of Richmond on the 11-member board.

A native of Brunswick County, Mrs. Lee attended public schools in Petersburg and received her B.S. degree from JMU in 1943.

Mrs. Lee was formerly chief dietician at the Veterans Hospital in Columbia. She worked at the VA hospital there from 1947 to 1955.

Founders Day Events Include Awards, Lecture and Meeting

The three major awards of the James Madison University Alumni Association were presented March 14 during the University's Founders Day celebration.

At the Founders Day program, the alumni association presented its Distinguished Alumni Service Award, Distinguished Alumni Achievement Award and Young Alumni Award. The announcement of recipients and other details about Founders Day will be published in the spring issue of Montpelier.

Founders Day at JMU marks the establishment of the University in 1908 by the Virginia General Assembly. Founders Day is held near the birth date of President James Madison and is also used as an occasion to honor Madison.

The annual James Madison Lecture was also given at Founders Day.

Tom Watkins and University Relations Vice President Ray Sonner in the living room of Hillcrest, the alumni headquarters.

Watkins Named To Direct JMU Alumni Program

Thomas B. Watkins has been named the new director of alumni programs at James Madison University.

Watkins, who was formerly Harrisonburg area representative for the American Cancer Society, began work at JMU in December.

His appointment was announced by Dr. Ray V. Sonner, JMU vice president for university relations.

The alumni director's job includes supervising and coordinating all activities involving JMU's 20,000 alumni, Sonner said.

As alumni director, Watkins succeeds Ben E. Hancock Jr. Hancock has accepted a position as director of development and alumni affairs at Maryville College in Tennessee.

Watkins has been with the American Cancer Society since 1974.

Prior to that, he was director of development at WVPT-TV, the public television station in Harrisonburg.

At WVPT, Watkins initiated the station's membership campaign, television auction and awareness week. He was with WVPT for three years.

Before coming to Harrisonburg, Watkins was program promotion director and public relations director for WHEN Broadcasting Co., in Syracuse, N.Y. He worked for WHEN from 1955 to 1970.

Watkins has also worked for KUTV-TV, KSL-TV and KALL radio, all in Salt Lake City, Utah.

A resident of Lacey Springs, Watkins has a B.S. from the University of Utah and a master's degree in radio/television from Syracuse University.

Chapter Notes

The HARRISONBURG-ROCKINGHAM CHAPTER is again sponsoring receptions this winter at all home JMU men's basketball games. The chapter is also again promoting local alumni activity cards to use at special events.

The RICHMOND CHAPTER held its annual Christmas brunch at the home of Mrs. Inez Roop ('35), the Annual Fund chairman. The brunch was held Dec. 8. Special guests included Dr. Ronald E. Carrier, president of the University, and Alan Peer, director of development. Richmond area alumni also attended a pre-game reception prior to the JMU-VCU basketball game at the Richmond Coliseum on Dec. 20.

CHARLESTON, W. Va. alumni interested in activities in that area should contact Stan Wyatt ('74), 1917 Preston St., Charleston, W.Va. 25302. Phone: 304-345-8135.

Other interested alumni should contact the Alumni Office at JMU for information about chapter activities in their areas.

Alumni Will Elect Directors in May

Elections for openings on the Alumni Association Board of Directors will be held in May.

Nominations for the board are now being accepted by the alumni office at JMU. All alumni are eligible for nomination.

There are 12 directors on the board and directors serve three-year terms. A director may serve only two terms.

Four positions on the board will be filled this year.

The four board members whose terms expire are: Carolyn Copley Wake ('52) of Richmond; Elaine Solomon ('66) of Rockville, Md.; Hubert Doughty ('72) of Mt. Sidney; and Laura Turner ('50) of Springfield. All four are eligible to serve another term.

Following the election, the board's committee on nominations will propose a slate of board officers for 1980-82. The list will be voted on at the summer board meeting.

Class Notes

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1952

- **Dr. Charles E. Wynes,** professor of history at the University of Georgia, recently published an article on poet Albery Allson Whitman in the Illinois Quarterly.
- A number of members of the class of '52 recently gathered for a reunion at the home of **Charlotte Korn Roberts** in Richmond, Va. Among those class members attending were **Hiwana Cupp Crompton, Ann Bowles Davis, Julia Carter Eubank, Betty Anderson Foster, Ginny Saunders Hall, Rosalyn Scarborough Hauser, Betty Ruth Luck Lambert, Fran Moseley Purdum, Lorraine Warren Strickler, Carolyn Copley Wake, Mancha Holland White** and **Pat King York. Margaret Galloway Ford** ('54) also attended.

1955

- **Ernestine Wright Middleton** is serving on the board of the Tidewater District of the Virginia Federation of Garden Clubs.
- **Barbara Shafer Ohmsen** has been elected president of the Tidewater District of the Virginia Federation of Garden Clubs.
- **Joyce Munford Southgate** was named the "Outstanding Business Teacher" in Kentucky for 1977-78.

1957

- **Mary Hall Culpepper** received a master's degree in education from Stetson University in August 1979.

1962

- **Betsy Rose Carr** and her husband Wes and two daughters recently moved to Oslo, Norway, where Wes is on a three-year assignment with the U.S. Army.
- **Dr. Janice Clinedinst Fennell** is director of libraries at Georgia College in Milledgeville, Ga. She received a doctoral degree from Florida State University in August 1978.

Development News

JMUPay Allows Fund Transfers

Director Alan Peer and Connie Kerlin of JMU's Development Office

A new program of the James Madison University Foundation allows alumni and friends of the University to make gifts to JMU through automatic bank transfer of funds.

Under the program, called JMUPay, "you can authorize your bank to transfer the exact amount you want to contribute from your bank account to the Foundation's bank account," said JMU Development Director Alan Peer.

The program can be established through virtually any bank in the country. There is no charge for the service.

Under JMUPay, an individual can select the amount he or she wants to contribute and the date or dates the transfer of funds should take place.

Further information on the program is available from the JMU alumni office or development office.

Endowed Scholarship Funded

James Madison University has received its first endowed scholarship.

The gift to the JMU Foundation for the scholarship came from Gordon D. "Sonny" Bowman II, head of Bowman Apple Products Co. Inc. of Mt. Jackson.

The gift was given by Bowman in memory of his father, the late Gordon D. Bowman. The elder Bowman was formerly chairman of the Shenandoah County School Board and received JMU's Educator of the Year Award in 1975.

An endowed scholarship is one which provides an annual scholarship for a JMU student from the interest on the gift. The principal from the gift is invested and is not used for the annual award.

Currently, a gift of $35,000 is necessary to establish an endowed scholarship. However, Foundation officials have pointed out that economic conditions dictate that a larger contribution will probably be required for an endowed scholarship in future years. The gift to establish such a scholarship does not have to be donated in its entirety in one year.

Endowed scholarships can be earmarked for any academic or athletic area at the University. Bowman's gift will be used for a scholarship for a student-athlete.

The University has received a $35,000 pledge for a second endowed athletic scholarship. That challenge gift, however, carries the stipulation that a third endowed scholarship must be received by the University.

Further information on establishing an endowed scholarship is available from the JMU Foundation in Hillcrest at the University.

Development News

Athletic Fund Surpasses Mark

The 1979-80 James Madison University Athletic Fund Campaign has exceeded its goal of $200,000.

Gifts for the current fund will be received through June and the final total will be announced then. The drive passed its goal in December.

Funds raised by the drive are used for scholarship aid to JMU student-athletes and for general support of the University's athletic program.

A large portion of the funds raised in the drive came from Harrisonburg area business, industry and professional firms.

The leaders of the campaign, all from Harrisonburg, were: Dale Wegner, president of Dale Wegner Chevrolet Inc.; Alfred B. Whitt, president of Massanutten Bank and Trust; Ernest James, general manager of Ray Carr Tires; H. Dan O'Donnell, associate with Shomo & Lineweaver Insurance Agency Inc. and William C. Harris, president of United Virginia Bank/Spotswood.

Faculty, Staff Establish Scholarship

Donations from the faculty and staff at James Madison University have resulted in the establishment of a new $600 scholarship at the University.

The Faculty/Staff Scholarship at JMU will be awarded for the first time in the fall of 1980 to an entering freshman in the University's College of Letters and Sciences.

Alan Peer, development director at JMU, said the award will be given solely on the basis of merit.

To be eligible for the scholarship a student must rank in the upper fifth of his or her high school class in the junior year. The recipient must also have College Board scores of 1,100 or more with neither the verbal nor math score below 500.

In addition, Peer said, the recipient must demonstrate the potential to make exceptional non-academic contributions at JMU.

Hillcrest Receives Gift of Furniture

New dining room furniture for Hillcrest, the alumni house at James Madison University, is being donated by Mrs. Mary Henkel, president of Henkel-Harris Co. of Winchester, and by an anonymous donor.

The Virginia Galleries furniture for Hillcrest is expected to arrive at JMU in May.

Chairs for the new dining room table are being donated by former presidents of the JMU Alumni Association.

Hillcrest serves as the headquarters for JMU's Division of University Relations and houses the alumni and development offices. It is also used for alumni receptions and meetings.

Built in 1913, Hillcrest formerly served as the residence for the president of JMU. It has been used by the Division of University Relations since 1977, when President Ronald E. Carrier moved to a home near campus in the Forest Hills section of Rockingham County.

Class Notes

1964

- **Lois Blackwell Harrison** was recently elected president-elect of the Washington Vocational Association Home and Family Life Section. Lois lives in Bellevue, Wash.

1968

- **Dr. Marylou Riddleberger Barnes** recently received an appointment to chair the physical therapy department at Georgia State University.

1969

- **Jean Penfield Coats** is teaching kindergarten at the Little Red House, a Montessori school in North Stonington, Conn.
- **Michele Stoken McManus** is working for the Medicare-Medicaid Management Institute in Baltimore, Md.
- Photographs by **Anne Creery Savedge** were displayed in the Richmond (Va.) Public Library last summer. Anne's works have won a number of awards and citations, including a Certificate of Distinction in the Virginia Photographers Show held at the Virginia Museum.

1970

- **Don Conner** was recently named editor of "The Piedmont Literary Review," a quarterly journal of poetry.

1972

- **Julia Cooper** is working on a master's degree in health care administration at George Washington University. She is currently completing an administrative internship at Godwin House in Alexandria, Va.
- **Marcia F. Nickerson** is an administrative coordinator at DePaul Hospital in Norfolk, Va.

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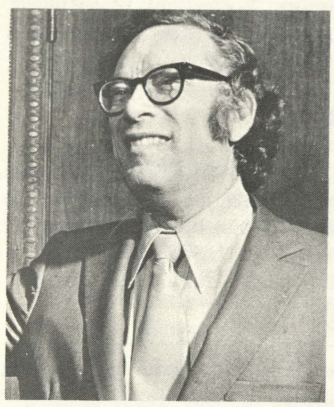
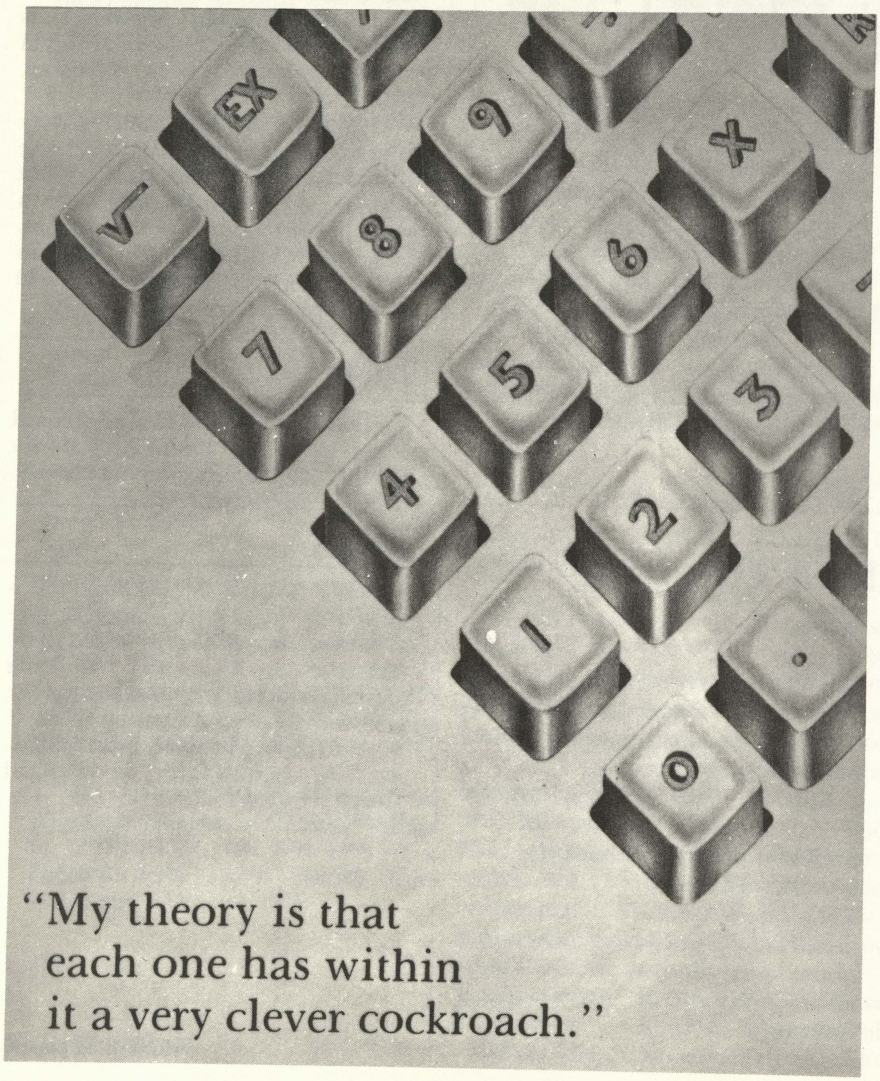
Looking Ahead

Isaac Asimov



From Infancy on the Planet Earth, Through Adolescence around the Sun To Adulthood as Creatures of the Universe.

The 21st Century and Beyond



In 1950, at a time when the computers that existed filled entire walls—entire, large walls—I spoke of a character in one of my stories who pulled a computer out of his pocket. I called it a "pouch computer pad." A few years later I described another such thing and called it a "pocket computer."

Furthermore, I carefully described what you did: you pressed little buttons and out sprang little red numbers. I got the color right at least for the first one—now they have one that shows black numbers.

People said to me, "Gee, Asimov, before they came out on the market, why didn't you patent it and make a packet?"

I said, "You perhaps have noticed that I only described the outside."

To this day I do not know what goes on inside the pocket. My theory is that each one has within it a very clever cockroach.

However, in the middle of 60s, it occurred to me quite apart from this, that I ought to describe how the slide rule works because no one ever taught me how to use a slide rule. For years and years whenever I asked, they said, "Asimov, don't bug me; you don't have to know."

Then there came a day when the teacher said to me, "What do you mean you don't know how to use a

slide rule?" So I taught myself how by fiddling with it.

God knows if I learned the right things, but I decided to write a book about it. It was called "An Easy Introduction to the Slide Rule." It had hundreds of simplified pictures of slide rules showing where you put the cross hairs and how you get the answer and so on.

With incredible thoughtfulness that book was published on the very day that pocket computers came out. It dropped dead instantly, and I stand before you as the futurist who wrote a book entirely forgetting his own predictions and being stunned by them.

And you can't have better credentials than that.

I was here at JMU two years ago to discuss the future of civilization, but I spoke largely about the immediate future, about the problems that are facing us—chiefly, the overpopulation problem, and how to beat it. I want to take another look past that.

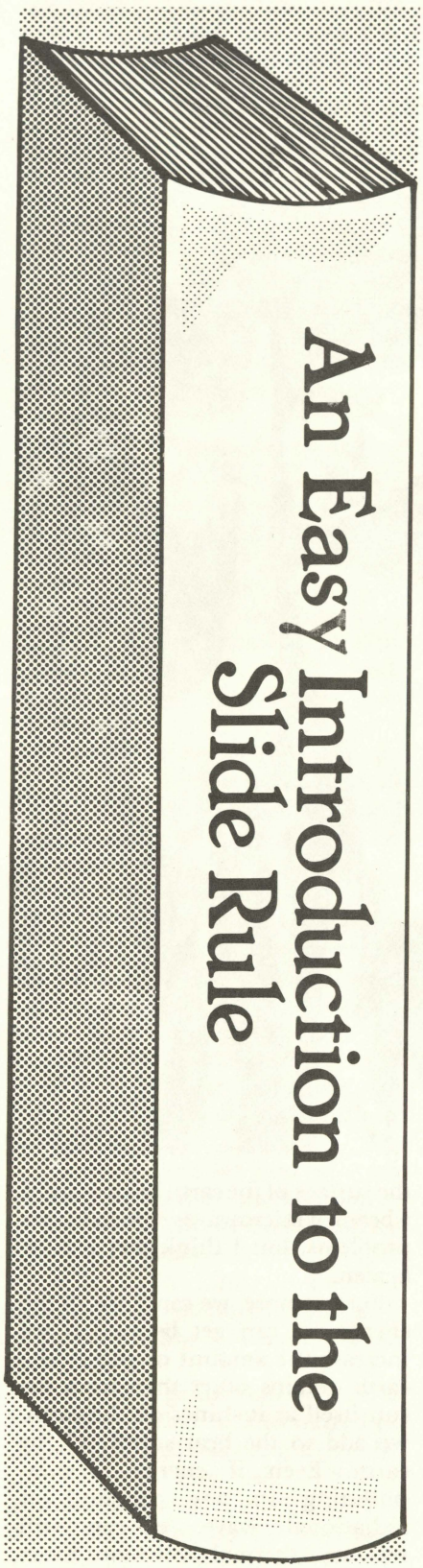
I realize that most of you weren't here when I gave that talk—you being the result of overpopulation. But that doesn't matter, because this talk will be complete in itself and won't depend on what I said two years ago.

I'm going to suppose that we have solved all the immediate problems that face us—all the dangers of decreasing energy, all the dangers of running out of resources, the radiation danger, of pollution of other kinds, of international friction. We are now living in the 21st century, and we don't have these problems anymore.

Are we going to have other problems? What's going to happen to us in the glorious 21st when we have solved our present problems?

Incidentally, do I predict we will solve our present problems? No, I don't; we may not. So the 21st century in that case may be easy to predict. Civilization won't exist.

But we're ignoring that part of it; we're pretending we have solved it.



Now what do we do?

It's possible that we may have another problem, and a very serious one. In order to solve our present-day problems, we'll expect to have a stable population and an advancing science. We'll have a longer life span, so there will be few young people, but many mature and elderly people. All will perhaps live comfortable lives in a completely automated world with no problems about energy, with no danger of war and a nice cooperative world society.

It's just barely possible that we're all going to bore ourselves to death. After all, for all the tens of thousands of years that homo sapiens has existed, he has existed in the constant presence of danger, of risk. Life has been all too often short and unpleasant. In order to accomplish something, man has had to fight his way up, and that is what he is adapted for. But suddenly he lives in a quiet, peaceful, dull world.

Who knows? We may make ourselves extinct for lack of anything else to do. I don't think that will happen, for a very good reason. I think that if the 21st century is a going concern, we will have moved out into space. In fact, I can say with absolute certainty that we will have moved out into space because that is the only way we can be sure we will survive our present-day problems.

I suspect, for example, that the proper answer for the energy problem in the long run will be solar energy.

Mind you, this is not necessarily the only form of energy. There will be other forms of energy too because each form of energy has its own special efficiencies and application. In fact, for going short distances, there is nothing as good as muscular energy.

Nevertheless, solar energy will be the standby. It will be the sort of energy on which the world as a

whole will run as long as the sun appears in more or less its present shape.

I furthermore think that the best way of collecting solar energy is from space, and I anticipate that within a couple of decades, provided that we don't destroy our civilization, we will be in the process of building solar power stations in space. These will be going concerns in the 21st century.

To be sure, we will be transporting the energy from the stations to the surface of the earth by the way of a beam of microwaves, which has its problems, but I think they can be beaten.

Furthermore, we can't use all the energy we can get because if we increase the amount of energy the earth obtains other than from the sun itself as it shines on the earth, we add to the heat supply of the earth. Even if energy is non-polluting in any chemical or radiational wave, it can still represent thermal pollution. Every bit of energy we add to the earth over and above what it receives from the sun naturally raises the temperature of the earth very slightly. And it doesn't have to raise the temperature of the earth very much in order to melt the ice cap and produce enormous complications for us.

But who knows? Maybe we can find a way to get rid of excess heat a little faster than the earth can do it naturally.

Sounds unlikely, but maybe.

Until we can, we can at least use some energy, more than we need now, and more than we are ever likely to need if we keep our population under control and also do not waste.

But if we have these space stations in space for the purpose of collecting energy, we will need a few other things. We will need many stations on the moon. We cannot build a hundred space stations using earth's own scarce resources and its own scarce fuel. A mining station on the moon will supply 99 percent of all the material we will need for the space stations.

The advantage of using the moon as a source of material is that the moon is a dead world. It is honestly dead. There are no aborigines on the moon; there are no natives to whom the moon belongs, not even viruses. It is dead real estate that is ours as much as it is anyone's.

Of course, people will say that you will spoil the beauty of the moon and produce pollution. Fortunately, one side of the moon is never seen from the earth's surface, and if this really becomes an issue, I guess we could restrict our deprivations to the hidden side of the moon away from us.

Furthermore, the moon is responsible for our tides, and there may be some fear that by reducing the mass of the moon, we'll reduce the tides, and in that way get in the way of whatever it is we do with the tides. It would be a long time, at any reasonable rate of exploitation of the moon's material, before we can

make a tangible difference in the effect on the tides. So at least for the next few centuries you wouldn't have to worry.

In fact, once we have our mining stations on the moon and our power collecting stations, it seems to me that we will also have something else because it would be extremely difficult to get these things done by commuting: sending people up at 8 a.m. and getting them down by 5 p.m. So I imagine we will build space settlements also — large space settlements capable of holding 10,000 or maybe 10,000,000 people in artificial environments in orbit around the earth.

There are people who object to this and think this is a horrible thought, because they say people will not be willing to move to an engineered environment instead of living here on natural earth.

But we know they are wrong if we go by human history. As far back as we can think, every century has seen the earth more urbanized than the century before. Ever since the first cities were built, every century has seen the city as a whole, more engineered. This is true right up to the present time.

I admit that in the United States now, the central cities seem to be in decay. People are flocking out to the suburbs, not to escape engineering, but to get away from broken down engineering, toward better engineering. So I don't fear that people will fear an engineered space settlement.

Of course, people have the idea that if you live in a space settlement, you'll be living inside an enclosed cave. They don't think it is very likely that people will want to live in enclosed caves instead of under the blue vault of the sky. Usually, when I say something like this and I sense agreement from the audience, I am speaking in a room like this which, as you will notice, has no windows.

It is quite possible these days, if you live in a city like New York, to live without ever really seeing blue sky. You're indoors virtually all the time and you could, without too much trouble, arrange it so that you'd never have to come out.

These space stations are not going to be visibly enclosed; they are not going to be caves, or metal monsters. It is quite possible to build them in such a way that they will resemble suburban U.S.A. if that's whats wanted. They will probably be just as earthlike as any place on earth but they will be out in space, which means energy will be very cheap for them: they'll get it from the sun.

In fact, we'll put more things out in space. Just think, if we put observatories in space that can see without the obscuring effects of our atmosphere, we could have laboratories in space that could take advantage of unusual conditions for unusual experiments: gravity-free conditions, a very high radiation, high temperature, low temperature.

What if we could put factories into space to take advantage of those same conditions? We could also use space as a kind of a sink for pollution.

Now this sounds horrible.

Are we going to pollute space? Well, if we're going to insist on having industries, we're going to have to pollute something, and it's better to pollute space than the surface of the earth for the simple reason that space is bigger. Naturally, we'll pollute it as little as possible.

If anyone says, why do we need industry altogether, the alternative is the kind of life we had in earlier centuries which some people visualize as a kind of pastoral paradise with shepherds piping to jumping lambs. I assure you that's not so.

I once had a gentleman write me a letter saying that he had moved to the country and was delighted to be rid of the city and all its artificialities and engineering. He was living close to the soil and growing his own food and enjoying it. The letter was written on a typewriter.

"It is quite possible these days, if you live in a city like New York, to live without ever really seeing blue sky."

And I know that if his child were sick, he'd have it to a modern hospital before you could say "Jack Robinson."

So it's quite possible to go back to the land on the money you've made in industrial society and live there with the comfort of knowing that

you can quit anytime you want to in case of emergency.

But if we all did it and dismantled our industrial society, I assure you, three billion people would have to get off the earth, because the last time we had a nonindustrial society, it supported one billion people very poorly.

What if we have a society like that moving out into space? Surely the space between here and the moon is enormous in comparison with the space on the surface of the earth, but we cannot expect to have anything like the density of population in space that we have on the earth's surface. I imagine that well before the end of the 21st century, we're going to have as much in the way of structures out in space as we can possibly endure between here and the moon.

Where can we go next? Now, the moon is practically in our backyard. It takes us three days to get to the moon even in our primitive rockets, and that's virtually nothing. It took Columbus six weeks to get to the Americas.

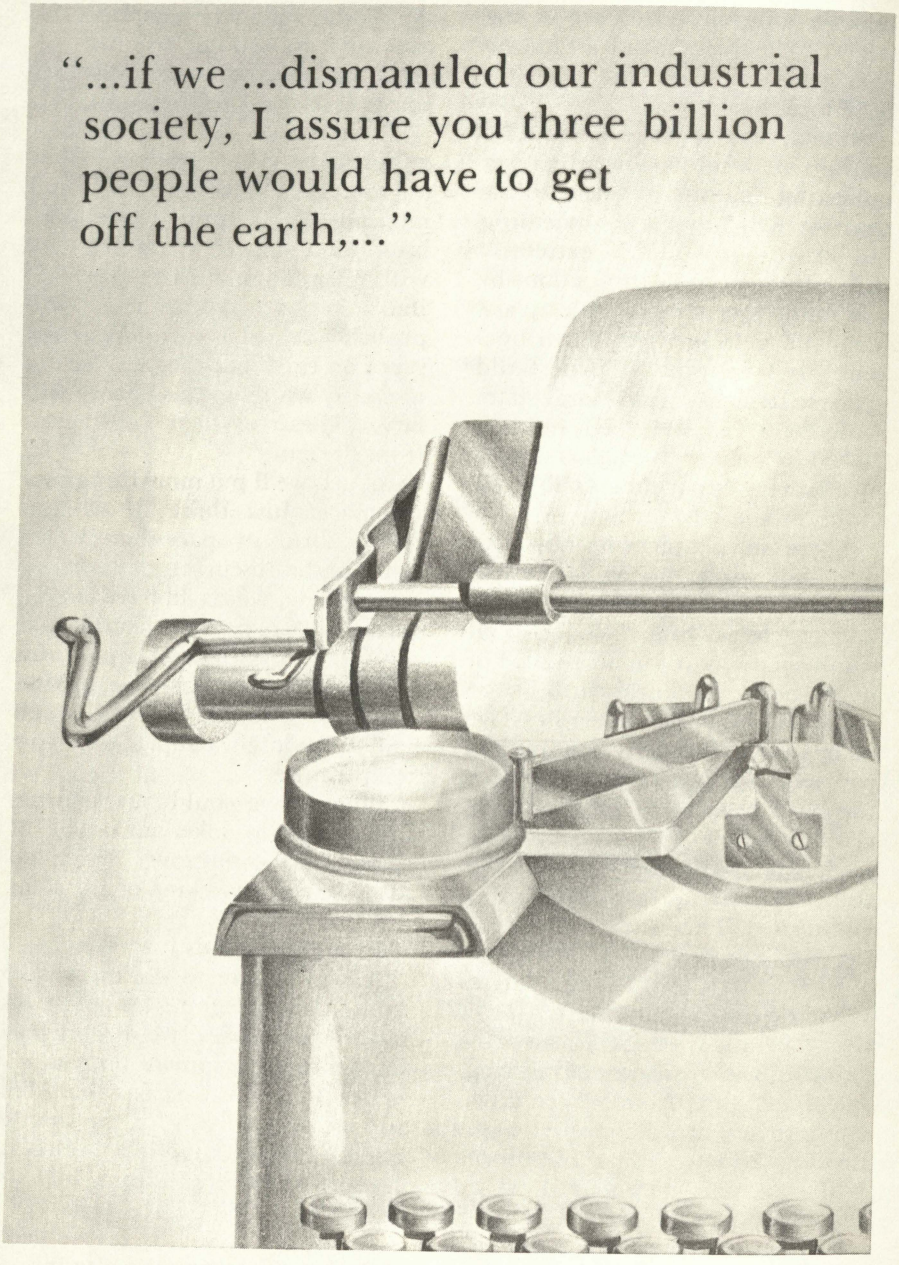
What's more, his was a lot riskier as a journey than our space travel, without trying to detract from the bravery of our astronauts. Compared to Columbus, they had it easy. Columbus didn't know where he was going. He thought he was going to Asia, but he couldn't be sure. As a matter of fact, he never reached Asia, although he thought he did.

The astronauts knew exactly where they were going.

Furthermore, once Columbus got out of sight of land, he was isolated. He didn't have a radio. He didn't have people in Texas talking to him all the time.

But if we plan to go past the moon, there's a problem. Venus and Mercury are sort of out of bounds: they're too darn hot; they're not much good for anything.

The next reasonable target is Mars. To get to Mars is very likely going to take months. A voyage will last perhaps nine months at the best. You'll have to sit around there waiting for a chance to get back, another nine months getting back. That means a year and a half or two years in order to make that trip tied up in a relatively small spaceship. It's not going to be very pleasant, and I suspect that the moon is as far as earthmen are likely to go.



Earthmen, earthbeings. By the time we've really colonized near space, it's not earthbeings whom we will count on for further exploration. We will have the space settlers themselves whose psychology will be completely different from ours. For one thing, they will be used to space travel. Space travel will be what brought them there. Space travel will be what keeps them alive; they'll be trading with each other, they'll be visiting earth, coming back. Space travel will be second nature to them.

Furthermore, they will be used to living in a controlled environment.

They'll be used to living in a carefully cycled environment. We here on earth live in a cycled environment, but the cycle is so huge that we're not aware of it. We drink pure water if we can get it from springs, and we don't ask where the water came from in the springs. It rained down; it was evaporated from someplace else—it can be evaporated from a lot of disgusting places—and eventually rain down and we drink it, and we don't think about it.

In any sort of space settlement, it is going to be quite obvious where the fresh water comes from. It's going to be quite obvious what you use to fertilize the land. If we earthpeople got into a spaceship, we would have to feel enclosed, we would have to feel the discomfort and the nausea of having things carefully cycled so that in effect we are eating and drinking our own wastes. And this is not the sort of thing that leads to happiness.

On the other hand, the settlers would be merely shifting from one environment to a very similar one somewhat smaller. They, too, may find it somewhat uncomfortable, but not in the same sense that we would. It is they who would be much more likely to undertake long voyages. So I assume that it will be the settlers who will be the cutting edge of humanity, and this is not at all surprising.

All through earth's history we have seen the difference between pioneers and stay-at-homes. Stay-at-homes have done important things, but it is the pioneers who have carved out the wildernesses. It is the pioneers who have established new societies. It was in pioneer societies that strong social experiments were made. So there is nothing strange about supposing that this sort of thing will continue.

The space settlers will be our new pioneers, and I imagine that by the end of the 21st century, there will be a strong motion out to the asteroid belt.

The asteroid belt has a great many advantages over the earth-moon system. In the first place, it's huge, much larger that the earth-moon system. In the second place, they've got something like a hundred thousand little worlds out there—the largest being about 600 miles across and the smallest being a mile across or less. The asteroids will supply the material for building new settlements, and it's easier to get these materials from asteroids than from the moon. The smallest asteroids can be hollowed out, so to speak.

Furthermore, the one great deficiency of the moon from the chemical standpoint is that it lacks the volatile elements for a variety of reasons. It doesn't have any detectable carbon, hydrogen or nitrogen—all of which are essential to any space settlement. You can't have life without carbon, hydrogen and nitrogen. So all those settlements that will be built in the lunar orbit will require earth, at least to the extent of their needs for carbon, hydrogen and nitrogen. Fortunately, earth has plenty of all of these and can well afford to spare what these stations will need. The return of what they get will be many times the value of what they give.

But I can see that earth may become a little cheap on this sort of thing and wonder how long it can keep on handing out hydrogen, carbon and nitrogen for all these foreigners.

Well, the nearest alternate supply of volatile material is Venus which has a great deal of carbon dioxide in its atmosphere and other volatiles in its cloud layer. But Venus is a very bad place to try to get these from. The temperature is about 600 degrees centigrade.

Mars has some, but Mars will probably be planned as a site for future human development, so the Martian volatiles ought to be reserved for Mars. There's not too much of it.

If we go further out, we come to the asteroids. There is every reason to believe that these asteroids do have quantities of these volatile elements. They are far enough away from the sun that they could perhaps have saved some in the form of ice, etc. We know for certain that the moons of Jupiter have volatile elements. We know that certain meteorites called

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"Yes, on Earth, if everything goes right, things will be dull."

carbonous chondrodites have a little volatile material in them, and it now appears that most of the asteroids seem to have characteristics like those of the carbonous chondrodites.

So once we go out to the asteroid belt we not only have room, but we no longer have to depend on Earth for the very essential volatile elements. We're also still close enough to the sun to make use of solar energy as a fundamental energy source. We can then visualize that in the course of the 22nd century, we will have a populated asteroid belt.

All this is very nice in connection with the remark at the very start of my talk that we might bore ourselves to death because of the lack of danger on Earth. Yes, on Earth, if everything goes right, things will be dull. It'll be a kind of planetary suburbia, but there'll always be these settlements—first in the lunar orbit, then in the asteroid belt—where things are bound to be a little more exciting, a little riskier, a danger of destruction and death a little brighter. And those people who thrive on this sort of thing will flock out there. They are our pioneers.

And we must then ask ourselves, where next? Because if we postulate this continuing growth, we have to know where we go to grow after we fill the asteroid belt because once we stop growing, it may be that boredom will then take place. But not necessarily. I can give another talk to prove that that's not so. But for now, let's assume the worst. Let's say that you have to continually fight boredom only by expanding.

Where can we expand after we fill the solar system? There are, of course, other stars and other planetary systems. There are in our galaxy alone several hundred *billion* stars.

For instance, if we divided the stars of our own galaxy among the people on earth, every man, woman and child would have something like 75 stars all of his own to play with.

And that's only one galaxy. There are perhaps a hundred billion other galaxies. So you can see that there will be some time before we can run out of space.

However, there's a catch. Every other star is far away. Even the nearest star is about 25 trillion miles away—that's 25 million million, which is a long way.

What's more, you can only move so fast. According to Einsten's theory of relativity, the speed of light in a vacuum is 186,282.4 miles per second, or 299,776 kilometers per second. Sounds very fast. At the speed of light you can go seven times around the Earth in one second. At the speed of light you can go to the moon in a second and a quarter. At the speed of light you can go to the sun in eight minutes if you want to. But at the speed of light it would take 4.3 years to reach the nearest star; it would take you 100,000 years to get to the other end of the galaxy; it would take you 2.3 million years to get to the nearest other large galaxy; and it'll take you something like 25 billion years to cross the universe from one side to the other. So there's virtually nothing you can do in a brief period of time.

Of course, you might say, who says the speed of light is the fastest you can go. As a matter of fact, you may not make the speed of light, let's face it.

If you do try to travel at the speed of light, you are going to hit things. Now I admit that you are not likely to hit a star. The stars are widely spread apart, and if you take careful aim, you won't hit a star for a couple of hundred years anyway. And even if it looks like you're going to hit one, you can correct your course.

But what about dark bodies that are in space that you don't know are there? Might you hit one of those? Still probably not. Even if there are a surprising number of dark bodies, space is so huge, that the chance of hitting one of them is extremely small.

However, there are other things. There are dust particles in space; there are even individual atoms in space. We know for sure that in interplanetary interstellar space between the stars there may be one atom in every cubic centimeter. In

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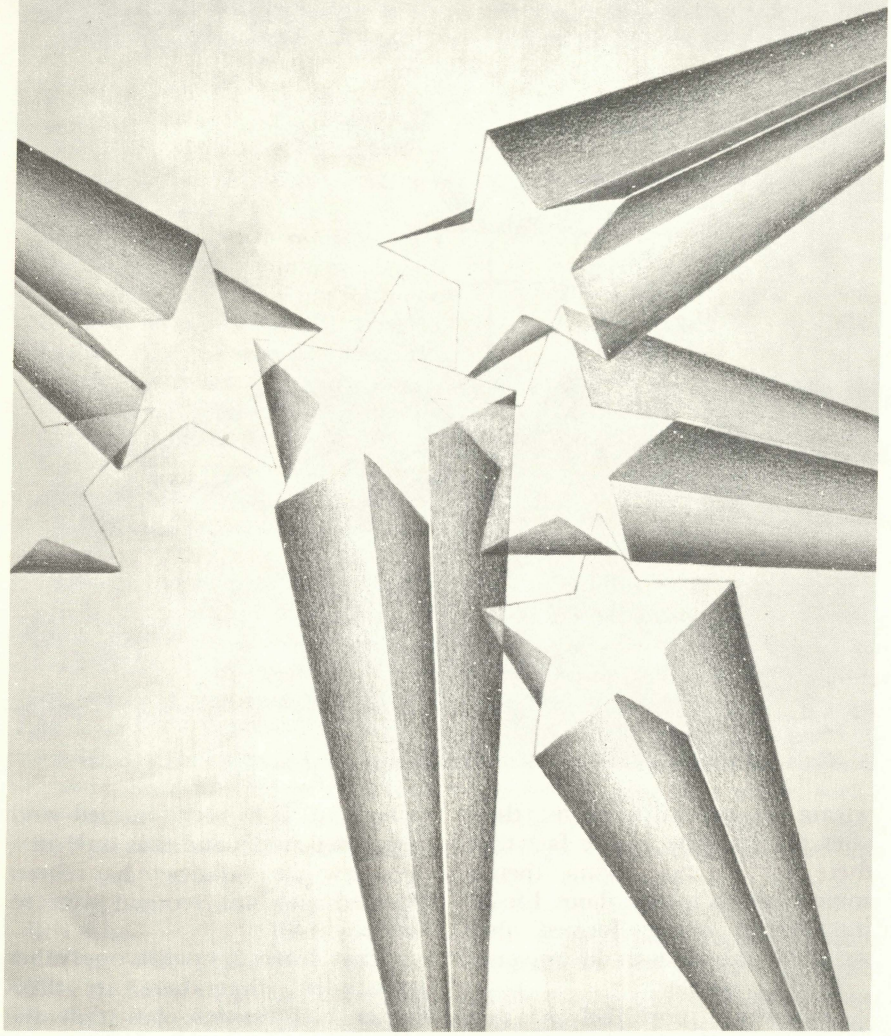


intergalactic space, there may be less than that—there may be one atom in every liter. That's not much, but you're bound to hit them. As the ship moves along, it hits these atoms. You say, what can a single atom do? Well, if an atom comes at you at nearly the speed of light, it's called a cosmic ray particle. A cosmic ray particle hitting a ship will go right through the hull, or it will set off other radiation, secondary radiation, by breaking down the atoms in the hull. In short, you will be subjected to radiation. And the more cosmic ray particles hitting, the more radiation you'll be subjected to, and you will not live very long. That's the trick about hard radiation.

Now I'll tell you another secret: it doesn't matter if the atom hits you at nearly the speed of light or you hit the atom at nearly the speed of light. Either way, it's a cosmic ray particle. So if you travel through space at nearly the speed of light, you are subjecting yourself to more in the way of cosmic ray particles than you can endure, which means that chances are you will not be able to travel more than about one-tenth the speed of light.

Past that, radiation becomes dangerous, which means it's going to take you at least half a century, to reach the nearest star. And you may well think you have better things to do the next half century of your life than to reach the nearest star.

Ah, but you know, it would seem that I am merely subjecting myself to present-day knowledge. It's as though, say, 300 years ago I was trying to figure out how long it would take me to get to the moon, and I figure that if I gallop a horse very fast...or if I row a boat straight up...

Who knows? The future may have ways we know not of, to cross space at enormous speeds.

Well, maybe.

So far the only way people have thought of doing it is to make use of tachyons which are hypothetical particles which can always go faster than the speed of light.

Unfortunately, the operative word there is "hypothetical." Even if they do exist, we have no idea how we can turn all the particles of a spaceship into tachyonic particles, send them somewhere, and then go back to ordinary particles. The engineering problems are terrific.

Another way suggested is to go through a black hole, but going through a black hole means destroying all matter down to subatomic particles. They're all pulled apart by tidal forces. We haven't the foggiest notion what to

do to prevent that. We can say, someday we'll work it out.

Well, maybe, maybe.

Someday pigs can fly, who knows.

On the other hand, perhaps we can put ourselves under, freeze ourselves to near absolute zero, send out a ship at ordinary speeds, and just keep ourselves at near absolute zero, and then come back when our destination is within sight, like in the motion picture "2001." This means that we have to think of some way of freezing ourselves without killing us. And bringing ourselves back...we haven't figured that out yet, and I don't know if we ever will; it's sort of risky.

Well, then, what are we going to do?

Personally, I think that none of these things will work for the following reasons.

With all those stars in the sky, there seems to me there must be an awful lot of planets that are like Earth that have developed life and intelligence. In fact, I've written a book this year in which I calculated that there might well be something like 650,000 civilizations here and there in just our galaxy.

And the question is where are they? If there are that many civilizations, surely some of them might have reached us.

Of course, before any of you ask, there are people who think they have. Some say they've reached us in the form of UFOs, the misnamed unidentified flying objects, because every time I hear about them, somebody identifies them.

And we hear about ancient astronauts. Well, the evidence for that is very inconsequential. This is not the place to argue it out, but it's not convincing, and I for one am simply willing to wait until it becomes convincing before I assume we have been reached.

If we haven't been reached, *why* haven't we been reached?

There are three possible answers that are each very likely.

One is that there's something wrong in the calculations: that, after all, in spite of the fact that there are so many stars, there's something so tricky about life or intelligence being formed that we're the only ones in the universe.

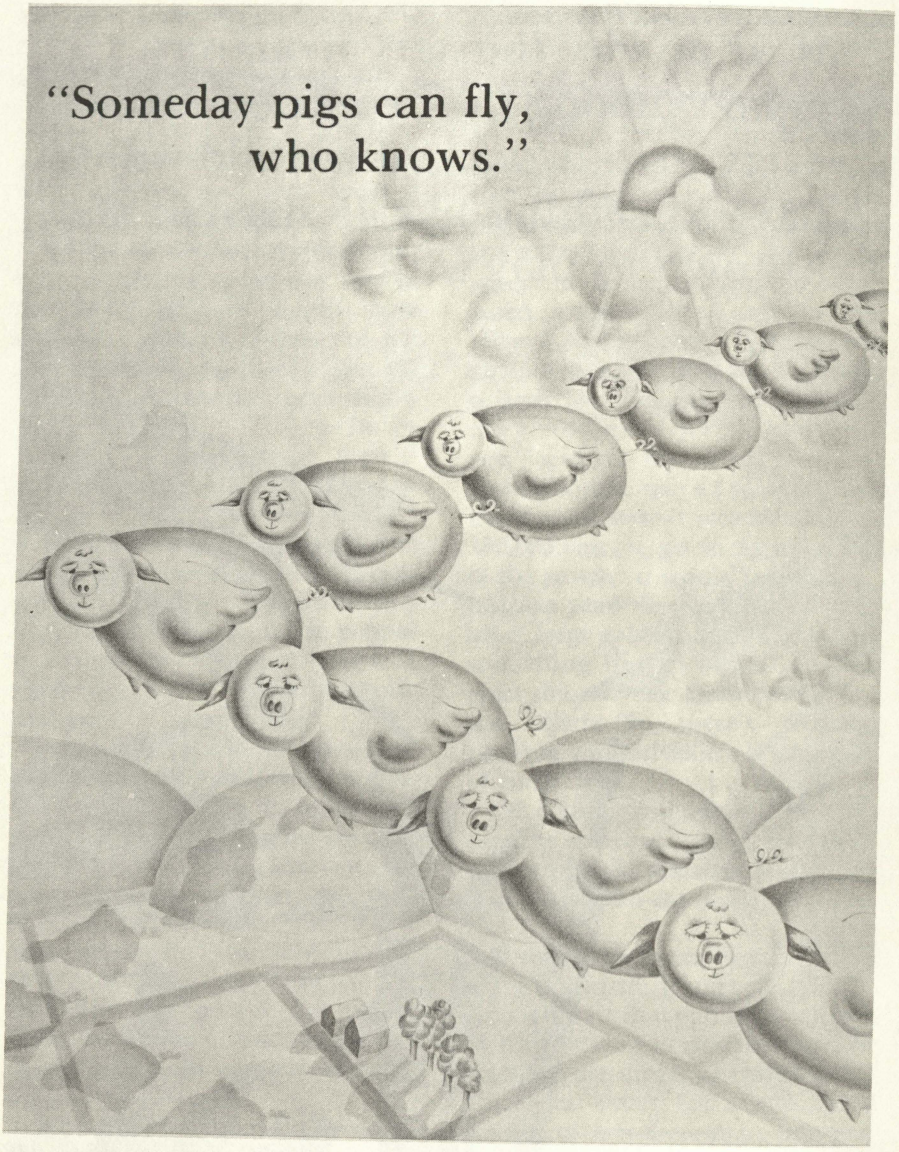
That's possible.

Or, perhaps more likely, it is that although civilizations form in great numbers, they don't last very long and they just kill themselves off as we may be in the process of doing here.

This is a very dismaying thought: that, in this universe, there are only worlds on which a civilization has not yet been formed or ones on which it has been formed and destroyed itself, and that only in a very few places like here has it been formed and not yet had time to destroy itself.

That leaves us with one other possibility, that there are these other civilizations, but that the distances between them, which may average in the dozens of light years, are so great that nobody has ever really figured a way of getting out en masse.

Yet I think there is. If we build our settlements in the asteroid belt, why not take off. Why shouldn't those settlements simply go out. I



imagine that the settlements will be very largely self-contained. They will get their energy from the sun, and they can also get it from hydrogen fusion, I'm sure.

I imagine they will be tired sometimes of just going round and round the sun. They're also going round and round the galaxy, accompanying the sun in its long, 200 millionth voyage around the center of the galaxy. Why shouldn't they get off. . .say goodbye to the sun. . .go adventuring on their own?

I imagine a great many of these space settlements, using a means of propulsion far beyond those we now have, will simply move out and go wandering away and see what they can find.

Why? What drives pioneers over the hills? What makes it so interesting to know what happens on the other side of the hill? Why do people like to travel? Why do people like to see different places?

I personally am phobic about traveling. I hate to travel, but as near as I can make out, I'm very much an exception.

Most people try to talk me into traveling. Well, there's a way to get rid of those people, so they won't bug me anymore. Off they'll go, and I imagine that this may even be a natural stage in the development of any really elaborate technological civilization; that eventually it goes to seed like dandelions, eventually drifting out from the original planet on which life formed—a large number of space settlements, each an independent world, moving out into space in all directions.

What will happen eventually? They'll have their own history; they'll develop their own ways of thought, their own science, their own literature, their own ways of life.

They won't run out of energy because they're bound occasionally to pass material objects which will probably contain a good deal of hydrogen. Hydrogen makes up 99 percent of the atoms of the universe, and it's hydrogen which will form the basis of the hydrogen fusion. Occasionally, they'll come close to a star and be able to study its planetary system just for amusement. If it has an asteroid belt that's not otherwise occupied, they may even settle down and welcome the chance to expand and gradually fill up that asteroid belt.

After all, we might then see what we call alternation of generations in biology. We have a sessile stage where the human beings stay in one place in a planetary system and can expand rapidly; and a motile stage in which they move out as separate little worlds but in which expansion is limited.

You can't overcrowd these little worlds, so you have to control population and use of resources very carefully.

Little by little we can stretch out over more and more of the universe. And every once in a while, such a world may spot another world, perhaps light years away. They can detect radiation from it with their advanced radio telescopes.

And then for generations upon generations they may approach each other—and what an exciting time that would be—as they cross fertilize, biologically perhaps, intellectually certainly . . . exchange ideas, exchange literature, exchange science, exchange music, exchange populations, if that's possible, and that will sort of increase the vigor, I am told.

And of course every once in a while, one space settlement, one world may spot another one, and when they come together, they find that wherever that world came from, it wasn't Earth. It is completely different in physiology, language and ways of thought.

But what's the difference? I trust by that time people will recognize the fact that in the course of the evolution of the universe, eventually portions of that universe become sufficiently complex to be able to contemplate themselves and wonder what it's all about. And when that happens it is this that counts, and not the variety of material wrappings that work their way around this intellectual development.

In other words, we will recognize the brotherhood of all intelligence and the fact that there we have a completely different form of intelligent life merely means that the cross fertilization may potentially be even richer.

And we have this vision as we look out as far as the mind's eye can see of a universe in which intelligence fills the universe—has already been filled perhaps—and is waiting only for us to graduate from our present infancy, tied to the planet Earth, through our adolescence when we have moved away from the Earth but are still tied to the sun, and finally to our adulthood when we become creatures of the universe, as perhaps we were meant to be all along from the moment life first formed on Earth.

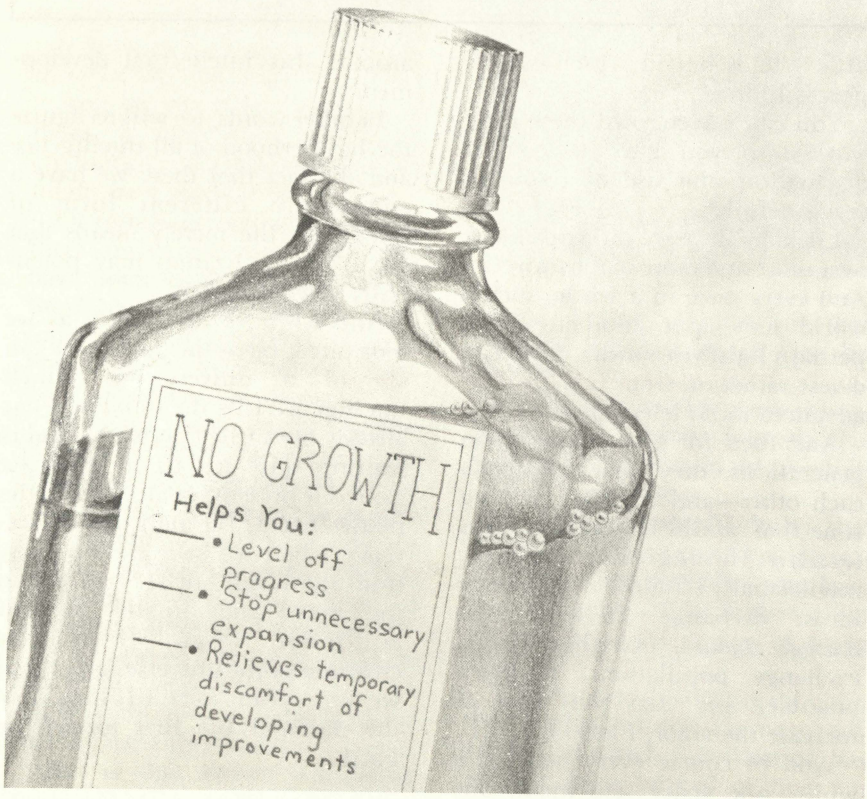
> "Some say they've reached us in the form of UFO's, the misnamed unidentified flying objects, because every time I hear about them, somebody identifies them."

Dr. J. William Hanlon

Dr. J. William Hanlon is dean of the School of Business at JMU. He came to the University in 1972 after serving as an associate professor of economics at Georgia State University and executive director of the Georgia Council on Economic Education. Hanlon has his bachelor's, master's and doctoral degrees from the University of Minnesota.

Historical Threads Will Weave The Future's Management Trend

"Managers will have to be reoriented to manage "no growth" organizations."

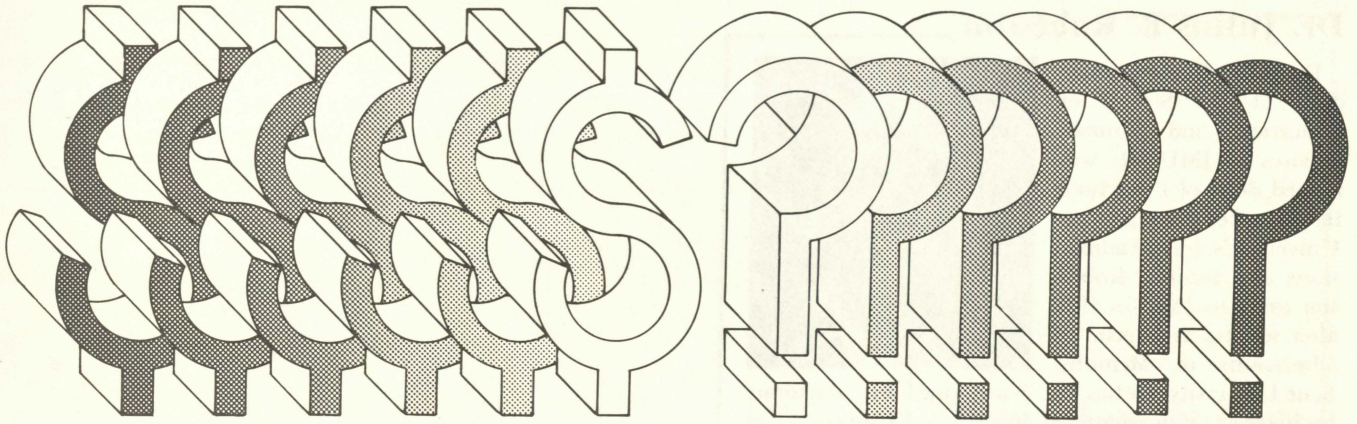


Management education at the collegiate level in the 21st century will be vastly different from what it is today. "Management" is used here as a general term covering the several disciplines of business and economics.

Management is a relative newcomer as a respected academic discipline, with a modest beginning in the second quarter of the 20th century but with a very rapid expansion in quantity and quality in the 1950s, 60s, and 70s.

There are five major historical threads of change that will exert major effects on management and therefore on education for management in the 21st century.

The first major thread of change is the present revolution in communication brought about by the rapid maturing of the telecommunications industry. Beginning with the telegraph more than a century ago, we have progressed through the telephone, television and satellite communication stages. The revolution now in progress is represented by the merging of televison, telephone and computer technology into systems that allow



"While innovations are not likely over the comparable next five, seven or ten decades, we will experience metamorphosis."

the transmission of data and interaction between people and computers by cables, microwave relays or satellite.

Telecommunication provides instantaneous information to assist managers as they coordinate people, materials and markets to produce and sell goods and services. Our potential for producing and presenting information has progressed beyond our human capability to fully utilize it for decision making. Management education will put greater emphasis on the use of information for decision making and less emphasis on the collection and organization of information.

A second major historical thread is the likelihood that we will have declining economic output per capita due to energy shortages and to environmental considerations. Our research and development capabilities will be increasingly devoted to the conservation of energy, the development of new sources of energy and to the maintenance of clean air and water. Success in this effort will be slow in coming, and initially, at best, will help us maintain our productive potential with little chance of significant gains. We are facing several decades with little chance for improvement in per capita output but with a strong possibility for decline. Managers will have to be reoriented to manage "no growth" organizations.

A third thread of change is a shifting in the balance of management emphasis toward consideration of the firm's external environment. This has been and will continue to be caused by the changing needs and expectations of post-industrial society with its greater emphasis on personal and social "quality of life" goals.

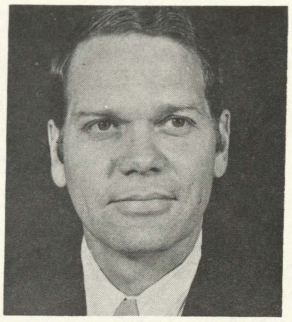
These considerations will assure continuing change in the role of government toward more direct involvement in business management decisions. The social goals of equal opportunity, environmental clean-up, consumer protection, etc., bring government directly into internal decisions on personnel, marketing and production. This trend will require an expanded understanding of government and politics by business managers and a better knowledge of business on the part of the government employee.

A fourth major thread of change is the growing economic interdependence among nations. Further advances in communication and transportation assure that business enterprise relating to energy, finance, food, communication, etc., will operate more and more on a world-wide scope. Managers will be required to become more knowledgeable about other societies as they deal increasingly with their international counterparts.

Managers in the 21st century will face many new challenges and opportunities. It is not possible to enumerate all of them here nor even to foresee all of them. Henry Ford initiated mass production techniques just 70 years ago. Lindberg made his historic flight just 52 years ago. The computer, just in the last decade, has become a part of the environment of all of us.

While innovations are not likely over the comparable next five, seven or ten decades, we will experience metamorphosis. Management education will lead as well as respond to those changes.

Dr. Julius B. Roberson



Dr. Julius B. Roberson is dean of the School of Education and Human Services at JMU. He was named dean of the school in 1975 after serving as the University's dean of admissions and records. Roberson came to JMU in 1972 after serving as director of admissions at Memphis State University. He has his bachelor's and master's degrees from Memphis State and his doctorate from the University of Tennessee-Knoxville.

Educational Audiences and Methods Will Change

As with other aspects of society, only one statement relative to education in the 21st century can be made with any assurance — changes will occur. Also, those factors resulting in change for our broader society will be those that will have a direct impact on education.

The first of these will be the problem of high cost and scarce sources of energy. The energy problem will clearly dictate changes in the construction of buildings. Because of the high costs, it is possible that existing structures will have been abandoned to take advantage of more energy efficient buildings. These buildings will be smaller, serving a smaller geographic region. School calendars will be developed primarily on climate cycles.

Another dramatic change will occur in the delivery of instruction. Not unrelated to the energy problem will be an increasing dependence on electronic technology to supplant or support the traditional classroom teaching methods in our public schools.

Interactive television, allowing for two-way communication between teachers and pupils, will become commonplace. The continuing "knowledge explosion"

will require the development of sophisticated information retrieval systems. Electronic computer systems will increase the students' and teachers' ability to locate and utilize information. The need for students to converge on a single site will be lessened by the impact of computer and television technology and the attendant need of conserving energy.

Even though the total population of the United States will increase only slightly, dramatic changes will occur in some age groupings. The majority of Americans will be over 35 years of age and life spans will increase. Schools will have to address the needs of a different society. The number of students from various ethnic groups will continue to increase with additional emphasis being given to the multi-cultural aspects of our society. There will be a common acceptance of persons who have handicapping conditions into our public schools.

With an increasingly mobile society, single parent families and women being an accepted part of society's work force, schools will be expected to assume responsibilities that today are considered the role of the family. With schools using television and other mechanical and electronic teaching aids, it will be more difficult, however, for the schools to assume greater responsibility on the classroom teacher. The teachers will develop programs of individual learning for each student. The number of supporting personnel will increase to provide teachers with the special help they will need to evaluate, diagnose, develop and carry out these individual programs of learning.

The cost of operating schools will continue to accelerate. This will bring about an increased level of interest in involvement on the part of the state and local governments to make the schools accountable and cost efficient. The federal government will assume a greater role in influencing local priorities with a resulting erosion of the concept of education being a "local" responsibility.

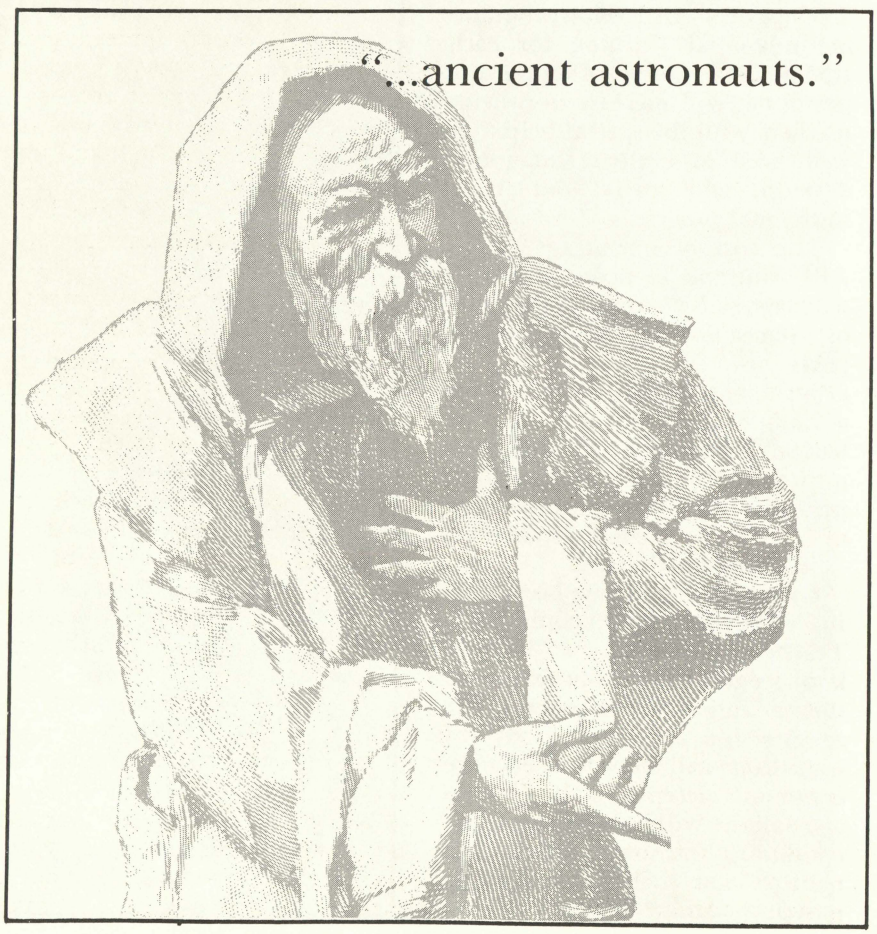
Great strides will have been made in determining how people learn. Teachers will develop a "body of knowledge" specifically related to the teaching/learning process. The acquisition of this body of knowledge will allow teachers to be commonly accepted as professionals. Salaries will be raised, working conditions improved, frustrations reduced and societal recognition moved upward.

"School calendars will be developed primarily on climate cycles."

Dr. Gary P. Crowther

Dr. Gary P. Crowther is an associate professor of chemistry at JMU. He came to the University in 1970 from Duke University where he was a chemistry instructor and research assoicate. He has a bachelor's degree from Thiel College, a Ph.D. from Duke University and post doctoral appointments at Ohio State, North Carolina State and Duke.

Scientific Development Must Solve Mysteries



The future of science is assured as long as human nature remains in its present state of evolution. Throughout his development, man has had an overwhelming fascination with mysteries. Not only do we seem to have a psychological need for the existence of mysteries, but we have an equally strong drive to solve them.

One might think that these predilections are solely aberations of our forebearers, and that modern man, with his sophistication and knowledge, is at last free from such rubbish. However, we are just as prone to the lure of mysteries as were our ancestors.

One might also hope that we are less naive and gullible with respect to what is required to dupe us. Unfortunately, the popularity of von Daniken, Velikovsky, the Bermuda Triangle, Bigfoot, etc., makes one wonder if anything has changed.

Despite the time, money and argument wasted such anti-science and irrationalism is but a minor branch of a much more healthy and very productive aspect of human nature. There happen to be many

"...a strong urge to rationalize or combine all the individual whys into an orderly, logical pattern."

legitimate mysteries that are well worth our attention. It doesn't matter what field of study is involved. We are blessed with an innate desire to know why, followed very closely by a strong urge to rationalize or combine all the individual whys into an orderly, logical pattern.

What is harder to understand is why, with all of our enchantment, it has taken man so long to become proficient at solving those mysteries associated with our physical environment—the study of natural sciences.

Several hundred years ago, Western civilization stumbled upon a new general method for studying science. Up until that time, advances in our knowledge of nature had been slow.

Previous civilizations were not total bumblers in science and technology. In fact, they were often more ingenious than we are willing to believe (hence, ancient astronauts).

The scientific method, as applied by Western civilization, is especially significant because it works well, and because it has become self-sustaining along with its close companion, technology.

The reason the future of science is assured is then three-fold: the scientific method has given us a very powerful, efficient tool for learning why. Secondly, science and technology have furnished Western civilization with a quality of life unique in history, which no one, if he thinks about it, would be willing to abandon. Thirdly, should we falter, there are numerous nations waiting in the wings for their turn to imitate our success.

The only answer to the physical problems facing us is more, and, perhaps, wiser science and technology, not less.

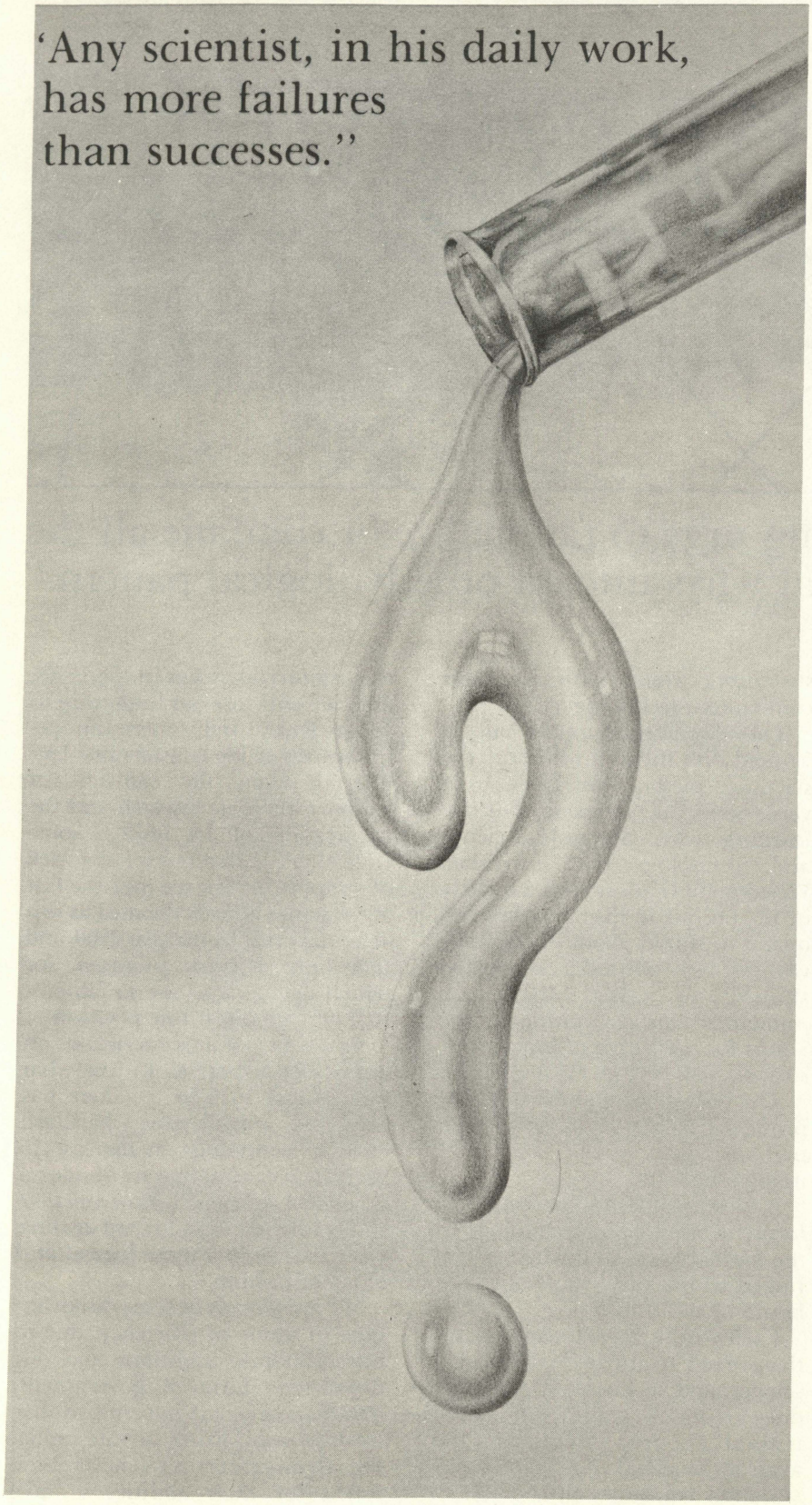
A tougher question concerns the future of science and technology in the United States and whether it is linked to the survival of our own brand of civilization.

Each year, it becomes less certain that we will retain our leadership in science and technology, not only due to economic considerations and natural resource limitations, but also for societal reasons. If our situation continues in the rest of this century as it has in the 1970s, then we will lose our leadership to Japan, Russia and western Europe.

Because of the considerable lag-time between the infusion of support for basic research and the application of its results, some experts argue that our relative lack of support for science over the last 10 years has already doomed us to a secondary role by the year 2000, and that only a crash program, for which democracies are so famous, will salvage our future position.

As a result of misconceptions on our society's part as to just what science can furnish us, there has been a considerable backlash against technology in the last 15 years. It is critical that we decide on a positive course to follow and take some difficult steps toward dealing with science in a more logical and efficient fashion.

We are already at some disadvantage in terms of efficiency, due to our economic traditions and our democratic form of government. Traditionally, our government has avoided subsidizing private industry. Democracies have never been noted for their abilities to take



quick, decisive actions in the absence of clearly defined crises.

Aside from taking steps to avoid the mistakes of the past, we should ignore those who argue for a less artificial, more simple, natural life style. Because of applied science and technology, we are infinitely better off than our forefathers and maintain a higher standard of living than anyone else on earth. If we are still not happy and feel that the quality of life is declining, then we have an idyllic, unrealistic memory of the life that our parents led.

Even if we assume that we do not need science and technology to make us secure militarily and that we could improve our foreign relations and, hence, our humanity by using only our fair share of resources, few are willing to vote for a diminution of the luxuries and conveniences that have now become necessities.

If we want to strongly support science and technology, what problems must be anticipated and solved?

The most striking impediment is public apathy and disenchantment. Any scientist, in his daily work, has more failures than successes. Just as it is impossible to predict nature in the laboratory, so is it impossible to predict with certainty the consequences of the application of the scientific findings, despite careful testing and forethought. All that should be required by society is reasonable precaution and the avoidance of major disasters, not perfection.

Given the limited availability of certain resources, as well as the increasing expense of energy, it is unrealistic to expect the fruits of science and technology to continue to be developed at an exponential rate. There are various valid reasons to slow the pace if we can convince a somewhat spoiled public. One of these has to do with the unsettling, rapid rate of change in society that accompanies advances in science.

Research will continue to be

expensive. We must find a way to insulate it from the regular economic cycles. If our economy falters badly, we may be forced to make decisions as to what areas are most cost effective. Hopefully, better mechanisms can be evolved, because now most decisions are made considering only the practicality and short term goals of research.

We will suffer if we ignore the demands and appeals of basic research. Pessimists point out that all the easy research problems have been solved and that to look at what remains in the physical sciences will be too expensive. They say society would be smarter to invest its resources elsewhere.

Even if the pessimists are correct, it would only add to the challenge of future scientists. The uncreative for years have thought that what remains undone will be prohibitively difficult.

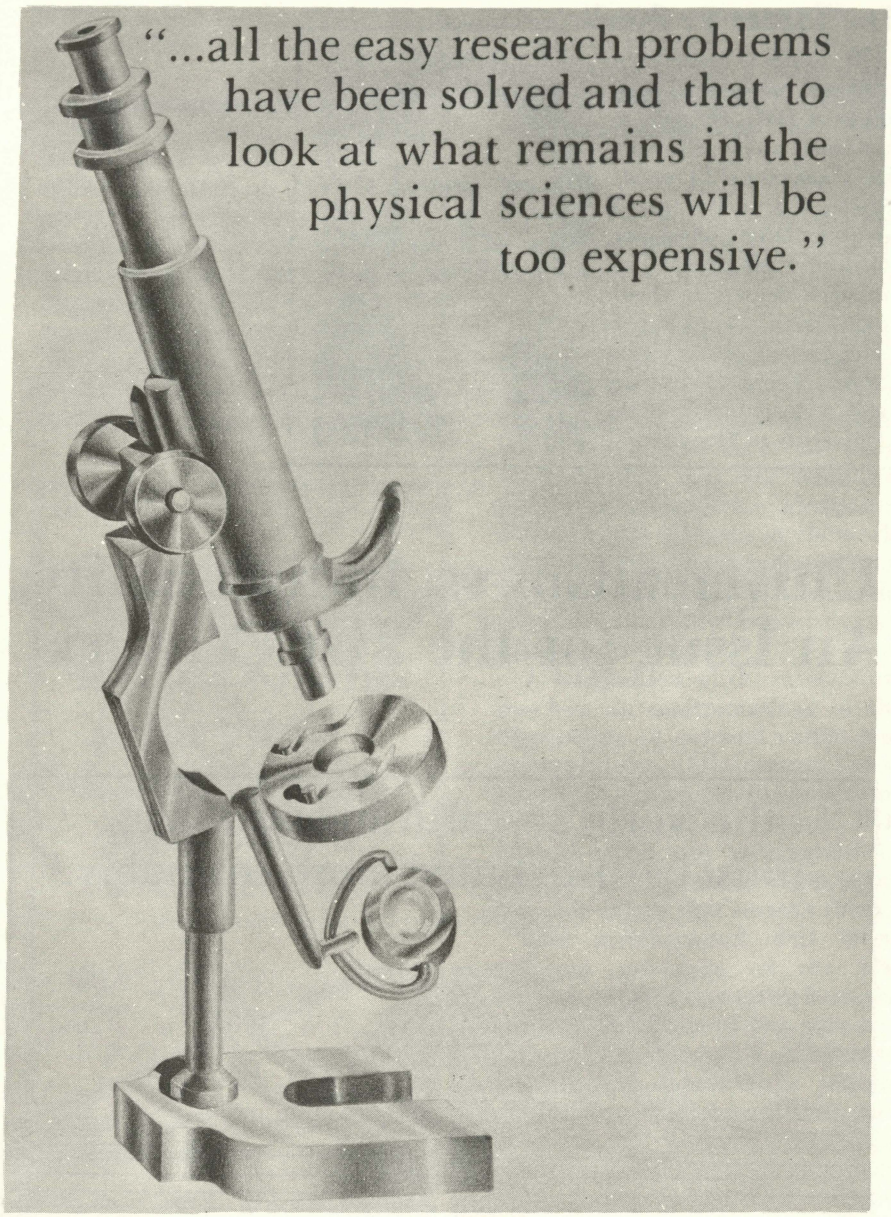
We must also be careful that we are not alone as a nation in putting restrictions on the percentage of our GNP which we are willing to devote to science and technology.

We will certainly be faced with increasing ethical decisions, such as those which surfaced concerning recombinant DNA, as research begins to furnish us with choices that are outside our traditions.

For science to continue to advance at a rate with which we are comfortable, some critical changes must take place in our educational system. We must change both how we educate scientists to handle the information explosion, and how the non-scientist is prepared to adjust to and enjoy an increasingly technologically-based way of life.

If we want maximum efficiency from the financial support given to science, a better understanding of the creative process and how science advances is required.

In the past, a key factor in many of the most striking discoveries has been serendipity. As a result, we make advances in an unpredictable, haphazard, inefficient fashion.

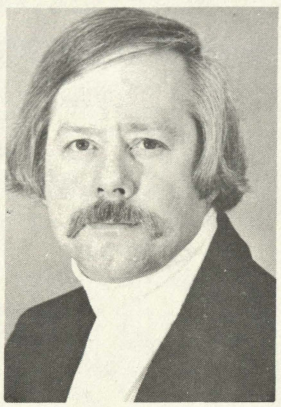


However, if the logical extreme is sought, some very serious problems would arise were we to discover a reproducible system of generating Einsteins and Newtons.

We have never been a timid people or one to back down from challenges. We have been hard working, aggressive, competitive and expansionist. If we put restrictions on science and technology as too expensive, too dangerous, or just too unpredictable and disconcerting, then this reflects a drastic and unfortunate change in our national personality. Because of intimate interweaving with our economy and defense, we jeopardize our future by not carefully nurturing scientific and technological development.

All of the foregoing is rather obvious and certainly not original or exciting. The most fascinating, important and least obvious aspect about the future of science and technology is. . .

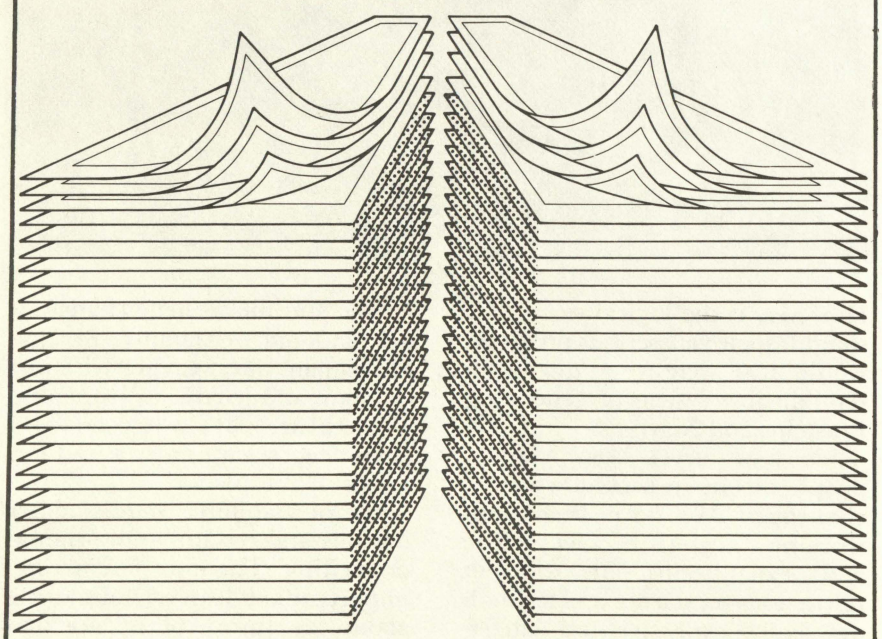
Dr. James L. Steele



Dr. James L. Steele is an assistant professor of sociology at JMU. He came to the University in 1973 from the University of Montana. Steele has a bachelor's degree from Davidson College, bachelor's and master's degrees in theology from Southeastern Theological Seminary at Wake Forest University and a doctorate from the University of Montana.

Universalism vs. Individuality: An Issue for the 21st Century

"...the world's wealth and resources must be distributed more equitably."



Someone has said that while there are many ways one may make a fool of oneself, predicting the future is the surest. We must not permit, however, the risk of making fools of ourselves to block our efforts to understand what is possible, probable and desirable in the future.

A person who predicts the future may be fooled, but certainly, one who ignores the future is a fool, for past, present, and future reality is a social construction. The quality of the future—of life in the 21st century—may well depend upon our ability to recognize the constraints of the past and the present, as well as to anticipate the constructions of the decades before us.

A Russian scientist has asserted that the earth is but man's cradle and that man cannot continue to live in the cradle forever. On the occasion of his recent visit to our campus, Issac Asimov echoed such sentiments and, indeed, put forth a scenario whereby persons from earth might move out into the cosmos. Frederick Ordway, a NASA specialist, purports the belief that man will begin colonizing in outer space during the early years of the 21st century. Such expectations and predictions raise important questions about the nature of the world society of the future.

The 21st century promises to be a dialectical period, vacillating between an era of individualism and an age of increasing univer-

salism. We can see the beginnings of such a dialectic even now.

The universalist ideology has been represented for some time by those (especially Third World nations) who assert that the world's wealth and resources must be distributed more equitably.

The individualist ideology is represented even now by many in the U. S. who argue that the resources to be obtained from other planets should belong not to the community of world nations, but to the nation(s) or "corporations" which retrieve them.

This "futuristic issue," (which may portend the dialectical nature of the coming century), refers to what The Washington Post (Oct. 30, 1979) recently described as "an obscure 'moon treaty' negotiated under United Nations auspices to safeguard and develop the resources of space as the 'common heritage of mankind.'" The individualist perspective is reflected in the statement by Leigh Ratiner, the lobbyist hired to oppose the treaty in Congress. He warned that the treaty will impose a "moratorium" on private-enterprise space exploitation. He further warned that passage of the treaty would subject the interests of industrialized countries to the "control" of collectivist Third World countries.

This individualist/universalist debate already has been joined on another futuristic issue, the exploitation of the seas.

Probably the single most important secular factor that will affect 21st century individuals and nations will be technology. The fundamental question: how will 21st century technology affect the individual and interpersonal relationships?

Technology has contributed to important advances during the 20th century in transportation, communication, computers, agriculture, medicine and many other areas. We can expect that further developments in these areas will continue and will revolutionize lifestyles. Obviously, there will be both positive and negative consequences.

The continued growth of automation technology to increase productivity is likely in the 21st century to lead to revolutionary social experiments, the most obvious being the lessening of the work week and an increase in leisure for nearly the total working population. One cannot ignore the momentum toward increased non-work time that has become an inextricable feature of the human work experience. The 21st century is likely to usher in the three- or even two-day work-week. Workers may "live in" near their work for two nights and return to their home in the country, in the mountains, at the lake or on the beach for the other five nights to be with their families.

"The 21st century is likely to usher in the three- or even two-day work-week.

The optimistic view on possible developments suggests that persons in the 21st century will acquire more control over their lives, their work schedules and their leisure. They will have the opportunity to be self-actualizers, achieving those personal goals which provide meaning and creativity to life.

But increased technological change necessitates a more highly educated population. Technological innovation can be rapid, threatening, disruptive and overwhelming. Persons must be equipped to adapt to rapid social change and helped to prepare for its consequences in interpersonal relations.

A major problem for 21st century society will be to utilize its knowledge and accompanying technology to improve the human condition. It is no secret that many observers feel that our insatiable pursuit of scientific knowledge and technology is threatening the world with disaster. The development of knowledge is the goal of science; the use and constraint of knowledge is a question of values.

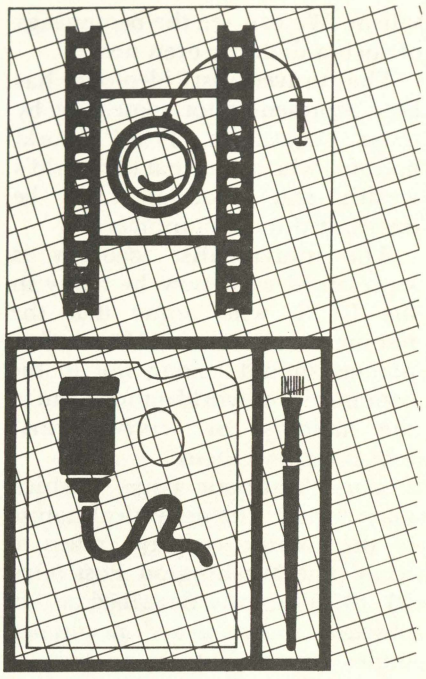
A recognition of the constraints involves an understanding of the importance of cultural values and assumptions. Ultimately, our ability to deal with the problems which threaten our future will depend upon our willingness to address the problems in light of the cultural values that sustain them.

The interpersonal and international problems of the 21st century are now emerging from the cultural problems of our past and present. The women's movement; the struggle of non-white peoples around the world; the unification of religious and national fervor; the promises and portents of biological research; the need for sophisticated and honest technological assessment; the clouds of unrestrained population growth; unresolved energy and environmental questions; unrequited cries from the poor and the Third World nations: these are cultural problems reflecting conflicting cultural values.

The quality of life in the 21st century will depend upon how realistically and how quickly we begin to re-evaluate where we have been and where we are now, in light of where we want to be as a world community in the 21st century.

Dr. Donald L. McConkey

Dr. Donald L. McConkey is dean of the School of Fine Arts and Communication at JMU. He came to the University in 1970 and was head of the department of communication arts before becoming a dean. Before joining the JMU faculty, McConkey was associate professor of speech and director of forensics at the College of William and Mary. He has a bachelor's degree from Illinois State University and his master's and doctoral degrees from The Ohio State University.



More Media Accessibility May Increase Understanding

In the next century the electronic media will play an ever increasing role in our lives. We will become better and better informed as a result of our access to the media. Computers will come into our homes and become an everyday part of our household routine for information retrieval.

There are some programs in communication which call themselves information science. This is a bit disturbing for it is quite possible that this kind of approach to communication in the 21st century may tend to have a dehumanizing effect upon our communication. Certainly, the electronic media, the computer and all of the gadgetery associated with miniaturization and printed circuits will make us able to receive and process a tremendously increased amount of information.

Today, the average high school student has more information than all that was available to the greatest minds of the Renaissance. Certainly, we will be challenged by what we do with the information available in our lives. The burgeoning activity in television is an example of the challenge of maintaining quality as we experience vast increases in the quantity of communication enterprises.

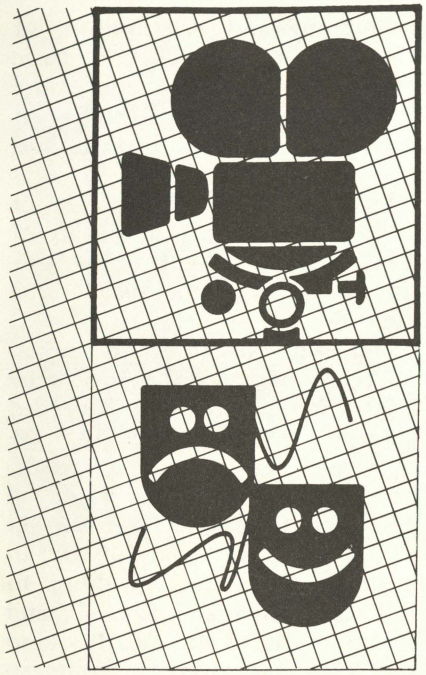
The electronic media is shortening our attention span. Indications are, in spite of increasing book sales, that we are reading less and relying more and more upon the electronic media for our information. Reading is not now the part of everyone's life that it once was. On the other hand, we spend increasing amounts of time with the electronic media as a source of information and entertainment. This will undoubtedly continue into the 21st century.

As a result of the "slick" production efforts in all of our television presentations we are expecting a dimension of entertainment in all communication. We expect speeches to be entertaining and professional. Students expect presentations in the classroom to be as entertaining and professional as those they view on televison. A hundred years ago the citizens of this country looked upon lectures as an entertainment form through the Chautauqua Series and the Lyceum Series. While the lecture series phenomenon survives today, certainly it is not as vital a part of the entertainment concept as it once was.

Video playback, two-way television and the computer terminal could very well revolutionize education. This hardware has the potential for bringing the classroom into the home and involving increased numbers of individuals in continuing education. Satellite networks will vastly increase the amount of point-to-point communication which is possible.

The 21st century will see the culmination of the results of a tremendous amount of research into the process of human communication. We are on the threshold of increasing our understanding of what takes place in this highly complex process of symbolic behavior. Though we have been studying persuasion for thousands of years, man has a very limited understanding of what actually transpires within the human organism when persuasion occurs.

We can account for the process of persuasion only by theoretical



models but not by significant replicable data. Man may increase his understanding of this process in the 21st century. In spite of the tremendous strides we have made in the hardware communication we are bound by a very limited and finite understanding of the human process. But the hardware itself should facilitate further study into the process of human communication and further our understanding of this process.

In the 21st century we will be able to process a greater amount of information than ever before in our lives. While we may read less, the printed word will continue to be of vital importance for in-depth and background information. The instantaneous communication afforded by electronic media will certainly need to be reinforced by the printed word. But, as a result of the influence of the electronic media on our lives, we will continue to shorten our attention span. We will increasingly expect communication presentations to be quick, professional and entertaining.

Appreciation of the Arts Vital to Man's Survival

Interest in the arts is exploding. Museum attendance has doubled. Regional theatre has increased 10 times in the past decade. According to figures available to the National Endowment for the Arts more people visited museums and art galleries last year than attended the total of all professional and collegiate football games played in the United States.

More and more people are able to earn a living in the arts. There are more major symphony and community orchestras, community concert series, regional theatres, art galleries, dance troupes, opera companies and other arts groups than ever before in our history.

This interest will carry into the next century. Traditionally, when man has been able to possess fewer material goods, interest in the arts and creative enterprises increases. Apparently, our creative urge transcends a mere depression or period of tight money and reduced spending power.

As we enter the "Buck Rogers Millennium" man shows no tendency to submit to the sterile technical environment painted in science-fiction stories. On the contrary, we are exhibiting a new interest in the well-being of our bodies and in our environment.

There is increasing desire to return to the earth and to the basic values of human life. This tendency should continue to increase interest in the arts in the next century. Dance, music, theatre and the visual arts will continue to prosper and play an important role in the life of the 21st century. Arts groups are stepping up efforts to organize support for the arts.

Unlike the humanities and the sciences, academic arts units must compete for funding with public and private arts agencies. Organizations such as Bravo Arts in Virginia were formed to support the activities of all areas of the arts. The Virginia Department of Education is currently moving toward integrating the various art programs so the arts can secure the kind of visibility and support necessary to survive and prosper.

National art education groups are becoming concerned with the education, training and development of professional artists and art educators. As these concerns are addressed the quality of artistic endeavors will increase.

The next century will very likely bring new art forms and significant variations of the old ones. In our lifetime we have witnessed photography coming of age as an art form and the entry of cinematography and television as art forms. The next century will see electronic art utilizing video display terminals and computers. New materials will undoubtedly be developed.

In the visual arts there is a movement to view art as an experience rather than as a static object. The environment of art and the experience of entering that environment will very likely be emphasized. At present, there is an exhibition at the Museum of Contemporary Art in Chicago in which the art is derived from the relation of the viewer to the space in which the art exists.

The 21st century will see the visual arts, drama, music and dance flourish as the pinnacle of man's expression of his creative urges. It is through the arts that man can seek to discover and communicate the very essence of his humanity. This appreciation of the arts will become increasingly vital to man's survival as we enter the predicted highly technological century to come.

Designing a University for Students of the Future and The Future of Our Students

Dr. Ronald E. Carrier

Massive changes took place at James Madison University during the 1970s as the institution successfully made the transition from a small, single-purpose college to a major, multi-purpose university.

The tremendous expansion of the 1970s will not be repeated during the 1980s. We expect the University's enrollment to increase gradually—perhaps by 25-50 a year—until an enrollment of 8,800 is reached. No decision concerning enrollment beyond that point has been made, although it is my thinking at this time to consider 8,800 as a ceiling.

The University will continue to be a predominantly residential campus, primarily serving students in the 18-to-21 age group. This means that competition for students will be intense, since national projections indicate there will be 25 percent fewer students in that age group in the 1980s. Part of our enrollment increase will come from an expansion of our graduate enrollment. We do not, however, anticipate that we will serve large numbers of adult, commuting students.

The curriculum which is already in place at the University will give us the opportunity to provide the professional training needed by our students as well as meeting the requirements of society. Numerous programs were added during the 70s which changed the institution from a teachers' college to a comprehensive university. We will continue to add new programs in the 80s but at a much slower pace. Instead of moving into entirely new academic areas, the new programs will be those which complement our present offerings. It is most likely that we will drop some existing programs as we add new ones.

Mindful of the high cost of new programs and of the difficulty in adequately staffing them in a steady-state environment, we see the need in the future for a strong basic studies program. Such a program exposes students to a core of knowledge which will enable them to accommodate the variety of personal and societal changes they will encounter in the future. We believe that the traditional programs we have offered—such as those in letters and sciences, education, business, and physical education—will provide a strong base for our curriculum.

I anticipate, however, that society will face several major problems in the future. The programs which we now face will be intensified in the 1980s—the problems of food production and distribution, of energy and of expanding the basic sciences to accommodate those needs. There will also be an increased need for medical and medical-related personnel to deal with the many health problems of the new decade. We are aware of these needs and will move our curriculum and faculty in the direction to provide educational opportunities in those needed areas.

Great progress was made in the 1970s in adding much-needed facilities at the University. Our physical plant is not completed, however. Our major thrust in the 80s will be to complete the addition to Madison Memorial Library; to build a fine arts building; to renovate Burruss, Keezell and Wilson halls; to add a ballroom to the Warren University Union so that the present ballroom can be used for expanded food services; to build an additional residence hall; to expand Madison Stadium to a seating capacity of 20,000; to complete the new field house with a seating capacity of 6,500-7,500; and to bring all other buildings up to first-class standards through an aggressive renovation and preventive maintenance program. We now have a preventive maintenance program which, if followed, will allow us to maintain high quality buildings and grounds at a minimum cost.

There is no question that energy

costs will be a major expenditure in the 1980s. We have set out to deal with that cost by entering into a tentative agreement with the City of Harrisonburg, which will provide the University with steam from a solid waste disposal plant to be constructed in the next few years. We also plan to convert our present central heating plant from oil to natural gas and to make all of our buildings energy-efficient through insulation, replacement of windows and through temperature controls using a central computer. Finally, and perhaps most importantly, we are seeking to make all students, faculty and staff members fully aware of the high cost of energy so they can take the conservation measures necessary to save energy.

James Madison University is a residential campus, and we are aware of our responsibility to the total development of students. In order to provide programs and activities which enable students to develop to their fullest potential, we must be aware of the philosphical and psychological characteristics of our students. Studies by the University's division of student affairs indicate that students at JMU and throughout the country are becoming more conservative. This change in attitude will not only involve program changes, but also changes in lifestyles.

We believe that the climate on campus is healthy. Our students are committed to personal growth and have a strong affection for the University. We want to enhance this feeling and use it to develop pride and commitment which will be sustained for many years as students become alumni of the University.

The University must recognize the economic difficulties which faculty and staff members face in this time of economic uncertainty. A good faculty and staff are retained by providing an environment in which they can be productive, feel

useful and have a sense of pride in themselves and the institution. Inflation, however, is eroding the take-home pay of our faculty and staff. The University has a responsibility to provide salary increases and improvements in fringe benefits which will allow the faculty and staff to have real growth in income, to educate their children, to buy homes and to have a sense of security as a member of the University community.

The early part of the 80s will be critical in providing the salary increases and benefits necessary to enable the faculty and staff to make progress in their real income. It is not only important that we pay an adequate salary for present faculty and staff, but it is also important that we have a salary structure that is competitive in attracting quality new faculty members who are needed as we expand and improve our programs.

A major effort will be made in the 1980s to improve the overall image of James Madison University with the Virginia General Assembly and with those alumni, friends, corporations and foundations which are able to provide funds that will enrich our programs. No college or university has become a great institution solely from funds provided by tuition and tax dollars. We must seek additional funds from the traditional sources, but a major effort must also be made during the 80s to raise substantial funds through private giving.

To ensure that James Madison University is providing excellence in all programs, goals must be established for scholarships, faculty development, library development, research and campus development. These steps can be taken only by supplementing our traditional funding with private giving. Reaching an acceptable level of private giving will require a combined effort on the Board of Visitors, the faculty, the staff, the students and the alumni of the University.

A residential campus needs a

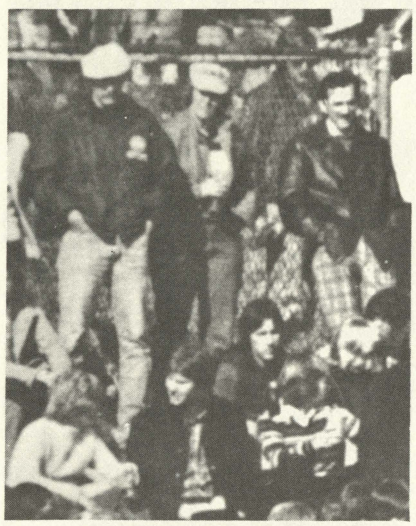
comprehensive athletic program. If James Madison were an urban institution, we would probably have a different approach to intercollegiate athletics—possibly concentrating on only one or two sports for national prominence. The majority of the participants in an urban institution's athletic program are spectators. However, in a residential campus such as JMU there is the need for the total development of students both as participants and spectators. It is incumbent on us to provide a wide range of athletic programs for male and female students.

The 1980s will involve many difficult decisions before we finally realize our goal in intercollegiate athletics. We must support the merger of the women's intercollegiate athletic association, the Association for Intercollegiate Athletics for Women (AIAW), with the men's group, the National Collegiate Athletic Association (NCAA).

I will propose to the NCAA that an institution offering five sports at the Division I level be allowed to offer all its other sports at any level. This will allow JMU to compete without scholarship aid in areas where we would have very little opportunity to compete for a national championship—such as swimming or track. This will allow greater participation by students and the addition of other sports programs without the enormous cost of scholarships.

We will continue to subsidize certain programs for men and women. All efforts will be made to ensure that scholarship programs are competitive at the Division I level. I believe that it is necessary for us to have a program which is competitive with the other leading institutions in Virginia. For that reason, our program has to be a subsidized one.

Personally, I would prefer to have aid awarded to student-athletes on the basis of need. However, that proposal has been rejected for the last three years by the NCAA and was recently rejected by the AIAW. It will be many years before there are changes in the awarding of athletic scholarships.



It is therefore essential that James Madison University take part in the formation of an intercollegiate athletic conference—a conference which will enable us to compete with peer institutions and to increase the quality of our program and the programs of other conference members.

Basketball at several state schools—including JMU—is now at the level of Atlantic Coast Conference basketball of seven or eight years ago. By forming a conference, we can be playing at a level with the ACC within five years. Conference members can attract the calibre of student-athletes who want to compete on an ACC-level by playing each other, by media coverage and by recognition of athletes through tournaments and all-star games. My energies and those of the athletic director will be spent to accomplish this goal of a conference for our athletic program.

If there is anything that will characterize the 1980s, it will be consolidation and expansion of quality. We do not propose to adopt a steady-state philosophy. We do not propose to stop taking risks. We do not propose to stop serving the constituents of higher education.

We do propose, however, to give a different emphasis and direction to higher education at James Madison University in the 1980s. Expansion in numbers was the key to the 70s, but the 80s will be characterized by the expansion of quality, the expansion of opportunity and by improvements in every phase of the University's operation.

We believe that we know what we are about. We believe that we know how to accomplish our goals. The 1980s promise to offer a different direction for James Madison University but one which is just as exciting and rewarding as the 1970s.

Football Dukes Finish 4-6 In Transitional Season

The James Madison University football team won its last three games to finish the 1979 season with a 4-6 record.

The football program moved to the National Collegiate Athletic Association's (NCAA) Division II level in 1979, but the Dukes' schedule included five Division I opponents including the University of Virginia and William & Mary.

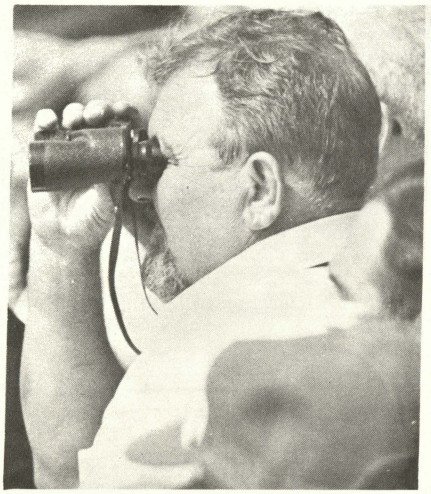
The 1979 season was a transitional one for the Dukes who are moving toward the Division I-AA level and the transition was not an easy one as JMU won just one of its first seven games. The team's lone victory during that stretch was a 17-0 Parents Day victory over Hampden-Sydney.

With a 1-6 record and coming off a 69-9 loss at the University of Virginia, the Dukes started their three-game winning streak with a 54-0 Homecoming victory over Randolph-Macon. JMU then closed the season with victories over Division II Shippensburg State (10-7) and Division I-AA Morehead State (16-3).

It wasn't a record-setting season for the Dukes, but it was a beginning and JMU head coach Challace McMillin was encouraged.

"I think the three-game winning streak at the end of the season was a tribute to the kind of players that we have in our program," McMillin said. "They've got their goals in the right place. I think their attitude was to be the best they possibly could in whatever they did. They came back every week and practiced hard and that certainly made it easier for the coaches."

"The kids in our program are at James Madison University to get an education and to play football," McMillin said. "They realize that



playing football is not the most important thing, but that doing your best is important. They're a group of young men who kept things in the proper perspective and kept coming back. I think that's as important as winning."

"We ended the season on a positive note and I think that will mean more enthusiasm as far as our off-season program is concerned," McMillin said. "It will also help our recruiting effort because we'll be able to point to how our young players came on at the end of the season."

continued from page 9

1974

- **Doug DePue** recently completed three years of service with the U.S. Army Band. He is working as a professional musician in south Florida nightclubs and on cruise ships.
- **Martha L. Gentry** has been commissioned as an ensign in the U.S. Navy.
- **Deborah Parent Powell** received a master's degree in elementary education from the University of Virginia in August 1979.
- **Rousby Quesenberry** is a research manager for Truslow Farms, Inc., in Chestertown, Md.
- **Dale C. Williams** has been promoted to audit manager with the Air Force Audit Agency. He works at Andrews AFB, Md.

1975

- **Randy Barrack** has been executive director of the Virginia Association of Secondary School Principals since July 1979. He is working on a doctorate of education degree at the University of Virginia.
- **Patrick J. Coffield** has been named director of research in the Office of the City Manager of Suffolk, Va.
- **J. Bradley Davis** is practicing law in Richmond, Va. He received his law degree from the University of Baltimore School of Law.
- **Janice Howdyshell Irvine** is teaching second grade in the Staunton (Va.) school system.

1976

- **Charlotte R. Anderson** has been promoted from instructor to assistant professor of nursing at Shepherd College in Shepherdstown, W. Va.
- **Barbara Smith Fowlkes** is base coordinator of a supplemental food program sponsored by the U.S. Department of Agriculture at Minot AFB, North Dakota.
- **Sharon Franklin** is teaching mathematics at Botetourt Intermediate School in Fincastle, Va. She is working on a master's degree at Hollins College.
- **Sherry Trayer Gentile** is a speech pathologist in the public school system of St. Thomas, Virgin Islands.

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Class Notes

continued from page 35

- **Bruce Hetherington** has taken a one-year position on the faculty of the JMU economics department while he finishes his doctoral thesis at Virginia Tech.
- **Michael O. Kingsbury** is employed by the public accounting firm of Hantzmon, Wiebel and Company in Charlottesville, Va. He passed the uniform CPA exam recently.
- **Doug Kiracofe** has been promoted to creative services producer at WWBT-TV in Richmond, Va.
- **Maryjane Price McAllister** is teaching grades one through five of the gifted and talented in the Linwood (N.J.) school system.
- **Susan M. Nelson** is working as a teacher in Rockingham County's (Va.) pre-school program for children with special needs.
- **Pamela C. Newsom** is teaching emotionally disturbed children in the Portsmouth, Va., area.
- **Kami Ramyar** is a business analyst for the Southwestern Virginia Community Development Fund in Roanoke, Va. He received a master's degree in business administration from JMU in 1979.
- **Janice Finneran Rathbun** is an associate buyer for Woodward & Lothrop in Washington, D.C.
- **Mark R. Tolland** received a law degree from Samford University in May 1979.
- **David VanDorn** is working as an optician and store manager in Portsmouth, Va.

1977

- **Conrad Calandra** is a division manager trainee in merchandising for Leggett Department Stores. He lives in Lynchburg, Va.
- **Peggy Cassel** is a civil rights investigator with the U.S. Treasury Department. She lives in Alexandria, Va.
- **Wayne Doleski** has been named director of campus activities at Lake Forest College in Lake Forest, Ill.
- **J. Daniel Dowell** is in his third year at George Mason University School of Law.
- **Eric Eanes** is manager for special food services at Radford University.
- **Ellen Athey Hansen** is a speech and language pathologist for Community Health Services, Inc., in Nashville, Tenn.
- **David Hartman** is a firefighter for the City of Charlottesville, Va.
- **Paul S. Huyett** was recently promoted to first lieutenant in the U.S. Army.
- **Jenny Jones** is an installation and repair technician for C & P Telephone in Alexandria, Va.
- **Margaret Ann Keck** is a speech pathologist in the Hermitage, Tenn., area.
- **Glen Lambert** is an engineer for General Telephone of the Southwest in San Angelo, Texas.
- **Lynn L. Murphey** is a resident director of a coed dorm at Concord College in West Virginia. She received a master's degree in counseling from JMU in December 1978.

Weddings

Bette Pascoe ('70), to David F. Rudgers, on September 29, 1979.
Susan Bailey ('73), to Robert W. Wilson, on July 1, 1978.
Mary Ellen Bruce ('73), to William Josef Cravotta, on July 16, 1977.
Kathy Butler ('74), to John Masters, on July 7, 1979.
Lea Farmer ('76), to Jerry K. Thorusen, on September 22, 1979.
Janice Finneran ('76), to Frank Rathbun ('77).
Rita Guidara ('76), to Robert Mule, on April 14, 1979.
Elizabeth A. Thompson ('76), to Robert H. Stabnow, on October 6, 1979.
David VanDorn ('76), to Debra A. Akers, on October 20, 1979.
Cathy Weeks ('76), to Richard A. Logan, on October 20, 1979.
Ellen Athey ('77), to A. Keith Hansen, on May 5, 1979.
Susan Bowles ('77), to William P. Harrell, on April 14, 1979.
Elise Cunningham ('77), to Jeff Tonsill, on June 16, 1979.
J. Daniel Dowell ('77), to Grace Leinemann, on September 15, 1979.
Alice N. Buckland ('78), to Keith D. Hartless ('79).
Douglas G. Drewyer ('78), to Elaine E. Kotting, on June 16, 1979.
Sue Kenyon ('78), to Stacy C. Hamblen ('78), on August 5, 1978.
Kathy Thompson ('78), to Kami Ramyar ('76), on May 26, 1979.
Valerie Frank ('79), to Scott Taylor ('78), on September 22, 1979.
Vonda Jay ('79), to Eric Eanes ('77), on May 26, 1979.
Kathleen Richardson ('79), to Brian Prindle, on May 26, 1979.

Births

A son, Christopher Forrest, to Thomas and Judith Jarrett ('65) King, on June 23, 1979.
A son, Brian Galen, to Kenneth and Linda Mizell ('70) Maupin, on February 28, 1979.
A daughter, Donleigh Marie, to David and Donna Stocking ('71) Honeywell, on September 22, 1979.
A son, Patrick Randolph, to Randy and Hazel Hiatt ('71) Jessee, in September 1979.
A daughter, Cynthia Louise, to Bernard and Susanne Herman ('72) Haske, on August 9, 1977. The birth of the child was previously erroneously announced in Montpelier as an adoption.
A daughter, Katie Morgan, to Gary ('73) and Patricia Peach ('73) Little, on July 2, 1979.
Triplets, Elizabeth Anne, Brad Dean and Mark Samuel, to Gary and Rosa Wymer ('73) - Ramsey, on January 8, 1979.
A son, William Robert II, to Robert and Susan Bailey ('73) Wilson, on September 14, 1979.
A daughter, Shannon Todd, to Archer ('74) and Robin Adair ('74) DiPeppe, on September 14, 1979.
A son, Aaron Jackson, to Ray and Deborah Fuller ('74) Pine, on May 2, 1978.
A daughter, Catherine Mary, to Rousby ('74) and Catherine McGrail ('74) Quesenberry, on August 24, 1979.
A daughter, Katherine Elizabeth, to Daniel and Barbara Long ('76) Deaton, on October 4, 1979.
A son, Jonathan Ashby, to William ('74) and Julie Horn ('78) Craun, on January 8, 1979.
Twins, Joseph Wythe and Walter Stuart, to Richard and Denise Russomano ('74) Newberry, on August 28, 1979.
A daughter, Michelle, to Donald and Sheryl Sims ('76) Lam, on August 12, 1978.
A daughter, Noel Celeste, to Douglas ('78) and Melody Watson ('78) Diehl, on June 17, 1979.

Obituaries

1914 Elizabeth Mitchell, on October 13, 1979.
1926 Evelyn S. Bond, on November 4, 1979.
1939 Dr. Jane Beery Adams, on August 3, 1979.
1943 Jean Bell Grandy, on June 5, 1979.
1949 Frances Hughes Pickett, on February 23, 1979.
1954 Hazel Elizabeth Wood, on October 18, 1978.
1957 Phyllis Meyerhoeffer Darden, on August 6, 1979.
1958 Evelyn Dyson Gephart, on July 20, 1979.
1958 Charlene Swecker
1974 Brenda Joyce Nunley Hawks, on November 10, 1979.

- **Hilda Root Paxton** is working at Young World Kindergarten and Day Care Center in Roanoke, Va.
- **Elizabeth M. Pickrell** is a pre-school special education teacher at Atterberry Elementary School in Frankfurt, Germany. She is on a two-year tour of duty in Germany with the U.S. Department of Defense.
- **Frank Rathbun** is publisher and editor of a trade association magazine. He lives in Alexandria, Va.
- **Michael P. Rendon** recently participated in the NATO exercise "display determination." Rendon, a first lieutenant in the U.S. Marine Corps, is an administrative officer of Marine Aircraft Group-20, 2nd Marine Aircraft Wing based at Cherry Point, N.C.
- **Kathy Reynard** is a graduate assistant at Michigan State University where she is pursuing a master's degree in public administration.
- **Susan Engle Siegel** is teaching second grade in the Jefferson Parish (La.) school system. She and her husband William live in Gretna, La.
- **Jill Summerville** is an intern with the President's Committee on Mental Retardation in Washington, D.C. She is working on a master's degree in social work at West Virginia University.
- **Elise Cunningham Tonsill** is manager of Meldisco Shoes in Fairfax, Va.

1978

- **Thomas P. Bowman** is a sanitarian for the Virginia Health Department. He works in the Colonial Heights and Chesterfield County areas.
- **Helen A. Daffron** is a quality analyst with Connecticut General Life Insurance Co. She is responsible for auditing 12 of the company's field offices and conducting research.
- **Barbara W. Greenwood** has been promoted to manager of computer operations for A. H. Robins Company in Richmond, Va. She formerly was a senior systems analyst in the information services department.
- **David L. Hardwick** is an ensign in the U.S. Navy. He recently completed primary flight training and has been selected to continue training in tactical jet aircraft.
- **Woody Huff** is a repair track and trainyard foreman with the Norfolk and Western Railway Company in Cleveland, Ohio.
- **Maureen Gallagher Lindsay** is teaching emotionally disturbed children in the Alexandria (Va.) school system.
- **Diane Powers** is an associate producer for National Public Radio's "Morning Edition."
- **Kathy Thompson Ramyar** is a computer programmer for Blue Cross/Blue Shield in Roanoke, Va.
- **Kathee Sowers** has been named account executive in the Roanoke Valley region for Shenandoah Valley Magazine.
- **Richard Travis** has been working as a professional actor in Ohio and Illinois. He is touring the country this year with the National Shakespeare Co., Inc.
- **Phillip Wengrovitz** is working toward a master's degree in medicinal chemistry at the College of Pharmacy of the University of Houston. He also teaches disco dance lessons in Houston.
- **Doug Wessen** is a master teacher in the emotionally disturbed/learning disabled program at the Grafton School in Berryville, Va.
- **Cynthia Farthing Wilson** is working for Valley National Bank. She is in charge of new accounts.
- **Second Lt. Neena R. Wright** is attending technical training school at Tyndall AFB, Fla. Following her training she will be stationed in Iceland.

Travel

Deadline is Close For Denmark Trip

There is still time for alumni and friends of James Madison University to make reservations to travel to Copenhagen the week of April 1-8.

The cost of the tour is $699 and includes round-trip air transportation from Washington, first class hotel accommodations, two half-day sightseeing tours, breakfast and dinner daily and all tax and service charges. Optional trips will also be available.

Travel Counsellors, Inc. of Harrisonburg is handling the tour arrangements. Further information may be obtained by contacting the travel agency or the Alumni Office.

1979

- **Sharon Connors** is a learning disabilities resource teacher at Conner Elementary School in Manassas Park, Va. She is chairing membership activities for chapter 192 of the Council for Exceptional Children for 1979-80.
- **Vonda Jay Eanes** is assistant manager for Leeds Music Center in Roanoke, Va.
- **Keith D. Hartless** is director of instrumental music at Broadway High School. He and his wife, the former Alice N. Buckland, live in Timberville, Va.
- **Cristy Ogden vonHemert Jones** is teaching math at Madison County High School in Madison, Va.
- The **Rev. Alvin C. Kanagy** has accepted the pastorate of the Walnut Creek (Ohio) Mennonite Church. He previously was pastor of Weavers Mennonite Church in Harrisonburg.
- **James Paxton** is supervisor of recreation for the City of Salem, Va.
- **Marsha Williams** is teaching tennis at Rockville (Md.) Centre Racquet Club and Linden Hill Racquet Club in Bethesda, Md.
- **Walter A. Wilson** is attending classes at the George Mason University School of Law.

News?

We'd like to hear about it. We'd also welcome any suggestions for stories that the Montpelier staff might develop. Clip off this form and send it back to: Office of Alumni Services, James Madison University, Harrisonburg, Virginia, 22807.

Name _____

Class _____

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